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ON SOME NEW ORUSSIDAE FROM ASIA AND AUSTRALIA (HYMENOPTERA, SYMPHYTA).[1]

By T. Maa (Maa Tsing-chao).

During the course of rearranging the collections of Hymenoptera of the Taiwan Agricultural Research Institute, Taipeh, and Musée Heude, Shanghai, two apparently new species and the undescribed sex of two known species were encountered. In describing these insects, certain new diagnostic characters are introduced, the shape and carination of malar spaces, the site of temporal carinae, the shape of cell *lsm*, the shape and relative length of basitarsi I, the terminal lobe of ♀ epipygium, the abdominal sternites, and the ♂ genitalia. Besides these, in *Ophrynella amazonica* (Westwood), the hind wing was found to bear 5 hamuli (apical series), but only 4 in *Orussus* and *Guiglia* species. This is perhaps a character of generic importance. I have followed Tillyard's (1926) system of nomenclature for the venation.

Orussus japonicus Tozawa (fig. 1).

Oryssus japonicus Tozawa, 1930: 160 ff. 1–3 ♂ (Nara and Osaka). Yano, 1932: 470 f. 921 ♂. Takeuchi, 1938: 177 ♂.

♀ (Allotype). Black. Antero-lateral spots on frons (near genae) and on abdominal tergite II, knees, and basal half of dorsum of all tibiae, all whitish yellow. Tarsi apically more or less reddish brown. Fore wings hyaline, apical two-fifths slightly infuscated, darkest in the costal half of cell 1*r*; extreme apical margin almost clear hyaline; stigmata black, medially reddish brown; veins brownish yellow, with C + *Sc*, *R* + *M*, *rm* (basal two-thirds), Cu_1 (basal third), Cu_2 + 1*A* (basal three-fourths) black. Hind wings also hyaline, apically very weakly, evenly infuscated; veins yellow to brownish, with *R* + *M* black.

Frons rugosely reticulated, medially narrowly foveated; anterior margin with three distinct notches, the median one being much deeper and broader and with an inconspicuous median tooth. Malar spaces rather shallowly reticulated, shorter than broad (*ca.* 18 × 21), anteriorly strongly recurved; mesal carina well developed. Cheeks reticulato-punctate, and with micro-sculpturation; lateral marginal ridge poorly developed, being separated from lateral orbit by a distance about as long as 4th antennal segment and anteriorly extending to level of anterior orbits. Posterior ocelli lying just on level of third pair of ocellar tubercles, each being about three-fourths its own diameter from the mesal orbit. Relative lengths of antennal segments about 17 : 9 : 23 : 11 : 7 : 24 : 16 : 13 : 20 : 10. Mesonotum and scutellum dull, with confluent, moderate-sized punctures; the latter posteriorly pointed; mesopleurae shallowly, coarsely reticulated and with fine punctures on interspaces. Metanotum medially carinated. Relative lengths of basal, costal, anal and apical margins of cell 1*sm* in fore wing about 19 : 23 : 27 : 10. Basitarsi I apically obliquely truncated, extending to level of mid-point of penultimate tarsomere. Tibiae III each dorsally with a single row of teeth, basal ones being whitish, scarcely recognizable, and arranged zigzaggedly; lateral or major apical spur about as long as two-thirds apical breadth of tibia; basitarsi III longer than the four following tarsomeres together (*ca.*

[1] Contribution No. 15 from the Division of Systematic Entomology, Department of Economic Zoology, Taiwan Agricultural Research Institute. Published with the approval of the Director of the Institute.

23 : 18). Abdominal tergite I dull, coarsely reticulated ; II a little more finely so, posteriorly densely, evenly, rather finely punctate, antero-laterally each with an impunctate, lunular, flattened patch ; III–VI unevenly, moderately reticulato-punctate, with their anterior and posterior marginal areas alutaceous and sparsely punctate ; VII evenly, finely, densely punctate ; VIII a little more coarsely so, and with some scattered, coarse shallow punctures, posteriorly pointed, postero-laterally slightly incurved ; relative lengths of tergites I–IV (measured along the median line) about 31 : 40 : 25 : 23. Sternite VI posteriorly with a median notch ; VII posteriorly with a V-shaped ridge ; the saw-sheath very narrow, very strongly keeled ; hypopygium (fig. 1) with submedian carinae short, widely separated, and posteriorly very strongly convergent. Length about 13 mm., fore wing 9·5 mm.

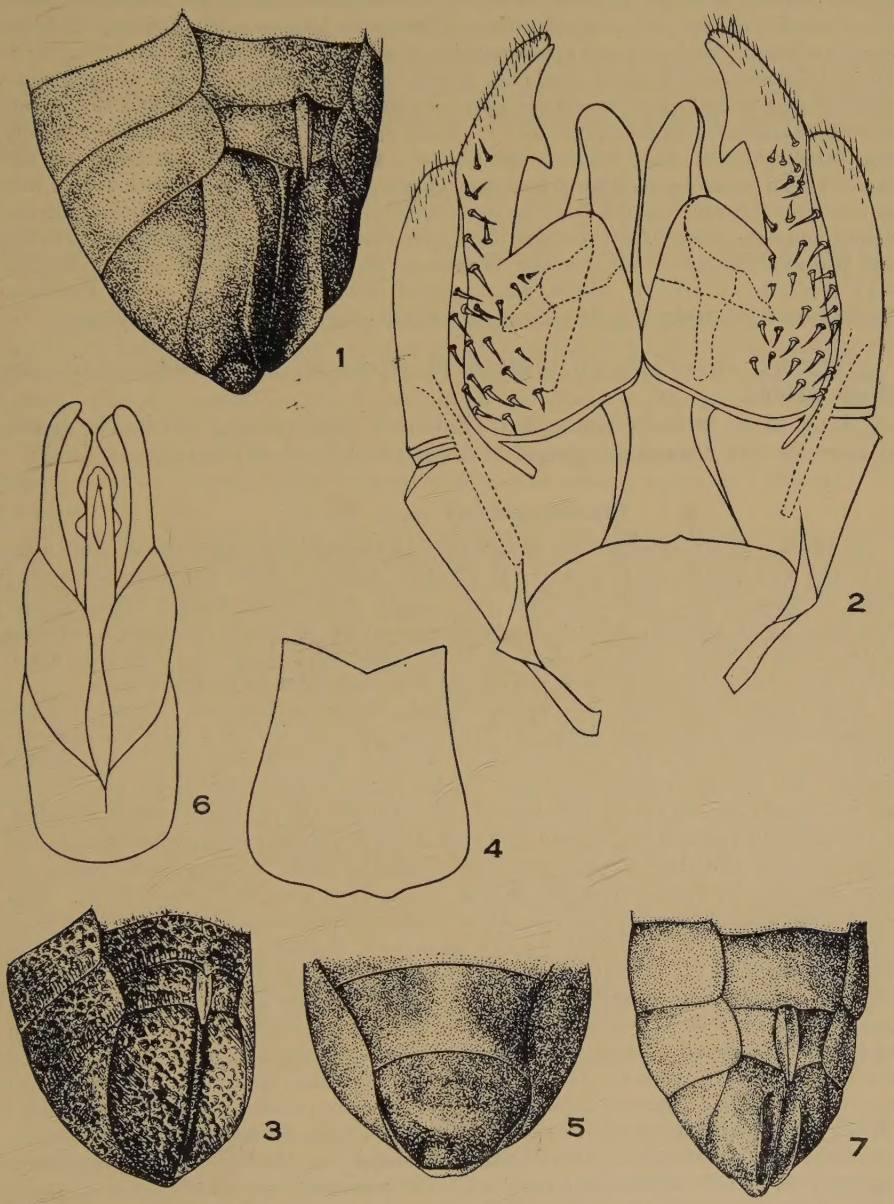
Honshu : Kasuga (Nara), 29.iv.1931 (*N. Tozawa*), 1 ♀ (Taiwan Agric. Res. Inst.).

The following discrepancies and inconsistencies are found in Tozawa's description : (*a*) The body is stated to be subcylindrical in the Japanese text, but " truncate " in the English text. (*b*) The maxillary palpi (in the Japanese text) should be read labial palpi, and vice versa. (*c*) The 3rd antennal segment is described in the English text to be longer than the 4th plus 5th, but in fig. 2 it is slightly shorter than the latter together. (*d*) The propodeum is excluded in his counting of abdominal tergites, and is, in the Japanese text, wrongly interpreted as the metathorax. (*e*) The " sternites " (in the English text) should read tergites. (*f*) In the Japanese text, the abdominal tergites I–II are described as matt, sparsely punctate, and the narrow posterior margins of the III and following ones shining ; whereas in the English text the " basal *sternite* punctato-reticulated, the others coarsely and smoothly punctured with a punctless glossy line on each *sternite*." (*g*) The mesonotum is described in the Japanese text as laterally slightly striated, and in the English text : " Mesonotum striated, *venation deep* " ; this is quite inexplicable. (*h*) The scutellum is described, in the Japanese text, as impunctate on the posterior margin, whereas in the English text, " shining, and scarcely punctate except apically reticulated." (*i*) The vein $R + M$ in the fore wing is shown in fig. 3 to be recurvate prestigmally, but it is normal in fig. 1. (*j*) The hind tibia is stated, in the Japanese text, to be with 1 apical spur.

Orussus decoomani sp. n. (fig. 2).

♂. Black. Coxae (apical extremities), trochanters, femora (knees whitish), tibiae (I brownish black except its basal 4th) red ; all tarsi brownish black. Fore wings hyaline, with a trans-stigmal and an apical infuscated fascia, the former being slightly narrower than the stigma and the latter occupying about the apical 3rd of the wing ; stigmata black ; veins yellowish to reddish brown. Hind wing apically very weakly infuscated.

Frons coarsely, deeply reticulato-punctate, anterior 3rd rather flattened, irregularly wrinkled ; anterior margin medially slightly notched. Malar spaces shorter than broad (*ca.* 6 × 7), coarsely, deeply reticulato-punctate, anteriorly slightly recurved, laterally strongly carinated. Cheeks very shallowly reticulated and with numerous micro-sculpturations ; laterally rounded-off, mesally each with a well-developed carina, which is separated from the lateral orbit by a distance of about an ocellar diameter and is running along the full length of the orbit and lateral genal margin. Posterior ocelli located between the levels of the 3rd and 4th pairs of ocellar tubercles, and each separated by about one-fourth its own diameter from the mesal orbit. Relative lengths of antennal segments I–V about 11 : 7 : 13 : 9 : 8. Mesonotum and scutellum dull, finely, confluently punctate ; meso-



FIGS. 1–7.—(1) *Orussus japonicus* Tozawa, ♀ allotype, abdominal apex in ventro-lateral aspect. (2) *Orussus decoomani*, sp. n., ♂ holotype, genitalia, clear mount. (3) *Orussus striatus*, sp. n., ♀ holotype, abdominal apex in ventro-lateral aspect. (4)–(7) *Guiglia sericata* (Mocs.), ♂ allotype, carinated frontal area (4), abdominal apex in ventral aspect (5), outline of genitalia (6), and ♀ abdominal apex in ventro-lateral aspect (7).

pleurae coarsely, shallowly reticulato-punctate and micro-sculptured, the interspaces being about one-fourth the punctural diameter. Metanotum longitudinally striate. Relative lengths of basal, costal, anal and apical margins of cell 1*sm* in fore wing about 7 : 9 : 13 : 4. Tibiae III dorsally each with a single row of well developed teeth, the lateral apical spur about as long as half apical breadth of tibia ; basitarsi III subequal in length to the four following tarsomeres together, *ca.* 18 : 19. Abdominal tergites : I deeply, rather coarsely reticulated and with some micro-sculpturations ; II more finely and shallowly so, the antero-lateral corners each with a flattened, impunctate patch, the posterior 3rd as well as the three following tergites dull, finely confluently punctate ; VI–VIII with numerous minute and some shallow, rather coarse and sparse punctures ; anterior margins of VI–VII and posterior margin of VI, however, alutaceous, shining ; relative lengths of tergites I–IV about 16 : 17 : 9 : 10. Hypopygium normal, evenly convex and evenly punctate. Genitalia as figured (fig. 2). Length about 6·5 mm., fore wing 5 mm. ♀ unknown.

Tonkin : Hoa-Binh, vii.1940 (*A. de Cooman*), 1 ♂. Holotype in the Musée Heude.

Runs to *O. unicolor* Latreille in Konow's (1905*b*) key, but in the latter species, the 4th antennal segment and dorsal surfaces of tibiae are whitish.

Orussus striatus sp. n. (fig. 3).

♀. Black. Basal 3rd of dorsum of all tibiae, all basitarsi (excluding the extreme apex of I), and 2nd tarsomeres of legs II–III (basally) whitish yellow, remaining portions of tibiae reddish brown. Wings hyaline, very weakly and evenly stained with greyish ; cells 1*r*, 2*r* (both costally) and 1*cu* (analo-apically) in the fore wing yellowish ; stigmata black ; veins yellowish, with $C + Sc$, $R + M$, *rm* (basal half), $Cu_2 + 1A$ (basal two-thirds) in the fore wing and $R + M$ (basal half) in the hind wing black to brownish black.

Body (excluding mesosternum) almost entirely covered with coarsely reticulate punctation, relatively coarser and deeper on frons, and finer and shallower on abdominal tergites I–V. Frons with the anterior 4th confluently, minutely punctate ; the anterior margin with 3 very indistinct notches. Malar spaces longer than broad (*ca.* 3 × 2), antero-laterally strongly produced, laterally rounded-off ; the anterior margin recurved. Cheeks laterally rounded-off, mesally each with a well developed carina, which is separated from the lateral orbit by a distance about two-thirds the ocellar diameter, and is anteriorly more strongly developed, extending slightly beyond the level of anterior orbits. Posterior ocelli lying on the level of 4th pair of ocellar tubercles, and being separated from mesal orbit by about one-fourth its own diameter. Relative lengths of the antennal segments about 24 : 13 : 16 : 10 : 8 : 21 : 18 : 14 : 29 : 10. Scutellum posteriorly narrowly rounded. Mesopleurae discally with some irregularly shaped, micro-sculptured interpunctural spaces, which are mostly about two-thirds the punctural diameter. Metanotum longitudinally striated. Relative lengths of basal, costal, anal and apical margins of cell 1*sm* in the fore wing about 11 : 14 : 16 : 5. Basitarsi I apically each with a papilla-formed appendix, extending distinctly beyond the level of apex of penultimate tarsomere ; tibiae III dorsally each with a single row of well developed teeth, lateral apical spur about as long as half apical breadth of tibia ; basitarsi III longer than the four following tarsomeres together, *ca.* 19 : 17. Abdominal tergites II–VII posteriorly each with a row of short, longitudinal striae ; II antero-laterally without the usual impunctate patches ; VIII posteriorly with a semicircular, median lobe ; relative lengths of the tergites I–IV about 15 : 21 : 10 : 11. Sternites also posteriorly striated ; VI with a sharp median tooth, instead of notched ; VII very extensively striated, leaving only anterior 3rd reticulated, with a broad median ridge, which is posteriorly slightly projecting out ; saw-sheath very broad, moderately keeled ; the hypopygium (fig. 3) very coarsely reticulated, medially narrowly depressed, submedian carinae obscured by reticulation. Length about 7–8 mm. fore wing 5–6 mm. ♂ unknown.

Riukiu Is.: Iriomote, 6.vi.1932 (*S. Hirayama*), 2 ♀♀. Holo- and paratypes in the Taiwan Agricultural Research Institute.

This new species can be easily distinguished from its cogeners by its rugose sculpturation, abdominal striation, observed hypopygeal carinae, dull integument and pale wings, and appears to be representing a peculiar group of this genus.

Guiglia sericata (Mocsary), 1900 (figs. 4–7).

Oryssus (*Ophrynopus*) *sericatus* Mocsary, 1900 : 126 ♀ (N. S. Wales).
Ophrynopus sericatus Konow, 1905*a* : 11. Konow, 1905*b* : 185, 186 ♀. Benson, 1938 : 8, 13, 14.

♂ (Allotype). Black, with palpi, trochanters, interior surface of femora I, tibiae II–III, tarsi II–III and apical tarsomeres I reddish brown, and with both extremities of all femora, tibiae I, basitarsi I and basal 5ths of tibiae II–III whitish yellow. Fore wings yellowish hyaline, with the transverse, post-stigmal fascia very weakly infuscated (a little more strongly so near the costal margin); transtigmal fascia clear hyaline; stigmata reddish brown; veins also reddish brown, those lying in hyaline area yellowish, and those on post-stigmal fascia dull brown. Hind wing practically clear hyaline, except for yellowish submarginal vein.

Frons very coarsely reticulato-punctate; carinated area (fig. 4) distinctly longer than broad; ante-ocellar transverse carina angulated at middle. Malar spaces weakly reticulated, as long as broad. Cheeks densely covered with moderate-sized punctures, each with a longitudinal carina running closely along lateral orbit and extending to anterior genal margin. Posterior ocelli lying on level of 4th pair of ocellar tubercles, each separated from mesal orbit by about one-fourth of its own diameter. Relative lengths of antennal segments I–V about 13 : 11 : 16 : 15 : 14. Mesonotum and scutellum dull, finely, confluently punctate. Mesopleura dull, microscopically alutaceous, with coarse, shallow punctures, interpunctural spaces mostly slightly smaller than punctural diameter. Tibiae III dorsally each with a single row of about 13–14 well developed black teeth on median keel; lateral apical spur about as long as five-eighths apical breadth of tibia; basitarsi III longer than the three following tarsomeres together (*ca.* 19 : 16). Abdominal tergites I–V dull, with confluent, moderate-sized punctures; those on VI a little sparser, with rather shining interspaces; VII finely, densely punctate, also with rather shining interspaces; VIII with dense micropunctures and shallow, rather sparse, coarse punctures; relative length of tergites I–IV about 15 : 19 : 10 : 15. Hypopygium (fig. 5) dull, confluently punctate; lateral marginal areas broad, strongly depressed; lateral margins slightly recurved; posterior marginal area polished, impunctate; posterior margin sharply recurved ventrad. Genitalia as figured (fig. 6). Length about 7 mm., fore wing 5 mm.

The following notes on the female are supplementary to the redescription given by Konow (1905*b*).

♀. Similar to ♂. Legs red, all tibiae basally whitish, the I each with a brownish black marking near the mid-point. Antennae (ultimate segment), pronotum (postero-lateral corners), tegulae, mesonotum (lateral areas), scutellum, and mesopleurae (discal areas) more or less reddish brown. Fore wings with veins in the hyaline areas yellowish, those in the fuscous areas brownish black. Hind wings with apical third very slightly infuscated; veins yellowish, with submarginal vein brownish yellow.

Carinated frontal area with sculpturation distinctly coarser and deeper than elsewhere. Malar spaces broader than long (*ca*, 9 : 11). Relative lengths of antennal segments I–V about 10 : 7 : 10 : 10 : 12. Basitarsi I apically each with a papilla-formed appendix, extending to level of apex of penultimate tarsomere. Tibiae III with the lateral apical spur about as long as half apical breadth of tibia; basitarsi III longer than the three follow-

ing tarsomeres together (*ca.* 23 : 19). Abdominal tergites I–III medially very weakly carinated; VII–VIII with dense micro-punctures and shallow, rather sparse, coarse punctures concealed under the thick, recumbent hairs; anterior margin of VII densely, finely punctate, and with rather shining interspaces; relative lengths of tergites I–IV about 20 : 25 : 18 : 17. Sternite VI posteriorly with a median notch; VII posteromedially reddish brown, shining, impunctate, without submarginal ridge; saw-sheath very broad, moderately keeled; the hypopygium (fig. 7) with submedian carinae well developed, close to each other and posteriorly very weakly convergent. Length about 6·5–11 mm., fore wing 5–7 mm.

"New South Wales," 1 ♂, 2 ♀♀ (*ex* T. Shiraki coll.) (Taiwan Agric. Res. Inst.).

The systematic status of this species has been discussed by Forsius (1926) and Benson (1935, 1938) and it has been variously referred as a synonym of *Stiricorsia maculipennis* (F. Sm.), *Orussus loriae* Mant., and *Guiglia queenslandensis* (G. Turn.). It stands nearest to *G. bombycinis* Benson, from which it can be immediately distinguished by the shape of its carinated frontal area and the colour pattern of its legs.

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A NEW SPECIES OF *CEROCOCCUS* COMSTOCK (HOMOPTERA: COCCOIDEA) FROM MAURITIUS.

By Raymond Mamet.

(*Rose Hill, Mauritius.*)

Cerococcus pileae sp. n.

Test of adult female elongate, brittle, felt-like, without any conspicuous waxy processes or ridges; yellowish to dark buff in colour. Anterior extremity rounded; posterior extremity tapering into a short tube. Dorsum strongly convex, the sides sloping inwards to the comparatively narrow ventral area. Length, 2·5–3·0 mm.; breadth, 0·8–1·1 mm.

Adult female (fig. 1, *a*) more or less elongate, with posterior extremity protruding; total length (on slide), 2·1 mm.; width (on slide), 1·1 mm. *Abdomen* showing a constriction and terminating into two prominent conical lobes. *Derm* membranous throughout excepting the inner faces of the anal lobes, certain areas in the paravulvar region, the dorsal anal plate (cauda) and the small discs bearing the cribriform plates. *Antennae* (fig. 1, *b*) rudimentary, bearing 7 stout setae and accompanied by 4 to 5 quinquelocular pores which are mostly situated in the area between antennae and margin. *Mentum* (fig. 1, *c*) short, conical, incompletely dimerous, with very few short setae. Dorsal and ventral *setae* few, small and inconspicuous. No *spiracular spines* present. *Spiracles* well developed, each with a band of numerous quinquelocular pores amongst which a few septemlocular pores (fig. 1, *d*) are scattered; this band extending from the spiracle to the margin. Anterior spiracle (fig. 2, *o*) accompanied by a well-marked cluster of 12 to 14 quinquelocular pores and a pore band consisting of 42 to 45 pores stretching from the spiracle to the margin, the majority of these pores present near the marginal end of the band. Posterior spiracle (fig. 2, *p*) with a cluster of 11 to 13 quinquelocular pores and a pore band consisting of 45 to 47 pores linking the spiracle to the margin, the majority of these pores present near the marginal end of the band; in addition, there are situated about 4 quinquelocular pores in a row cephalad to the pore cluster accompanying the posterior spiracle. The marginal groups of quinque- and septemlocular pores of both the anterior and posterior spiracular pore bands are each accompanied by two oval, trilocular pores with thick rims (which may be modified 8-shaped pores) (fig. 2, *q*); these are situated on either side of the pore band near the region where the margin curves to continue as the dorsal dermis. Legs (fig. 1, *e*) rudimentary, represented by flat conical plates, each with a distinctly developed claw protruding from its centre. Typical *8-shaped pores* in two distinct types, but both showing much variability: the large pores having a maximum long dimension of about 23μ, the small pores with a maximum long dimension of 8μ. The large 8-shaped pores (fig. 1, *f*) confined to the marginal and submarginal areas and disposed as follows: an elongate anal cluster composed of 5 pores on each margin of the protruding posterior extremity of the abdomen; cephalad to this cluster is an interrupted marginal line composed in all of 10 to 14 pores, the line extending from the anal cluster to the posterior spiracular cluster; this latter composed of 6 to 7 pores disposed in a cup-like fashion around the marginal extremity of each spiracular band of pores; the marginal extremity of each band of pores of the anterior spiracles are also accompanied by a similar cup-shaped cluster composed of 7 8-shaped pores; two 8-shaped pores situated far apart from each other are present (in type) on the right marginal area between the anterior and posterior spiracular clusters; three other clusters are situated cephalad to each anterior spiracular cluster: the frontal cluster composed of 5 to 6 pores, that opposite the antennae with 3 to 4 pores and the third, nearer the spiracular cluster, with 2 to 3 pores. The small 8-shaped pores

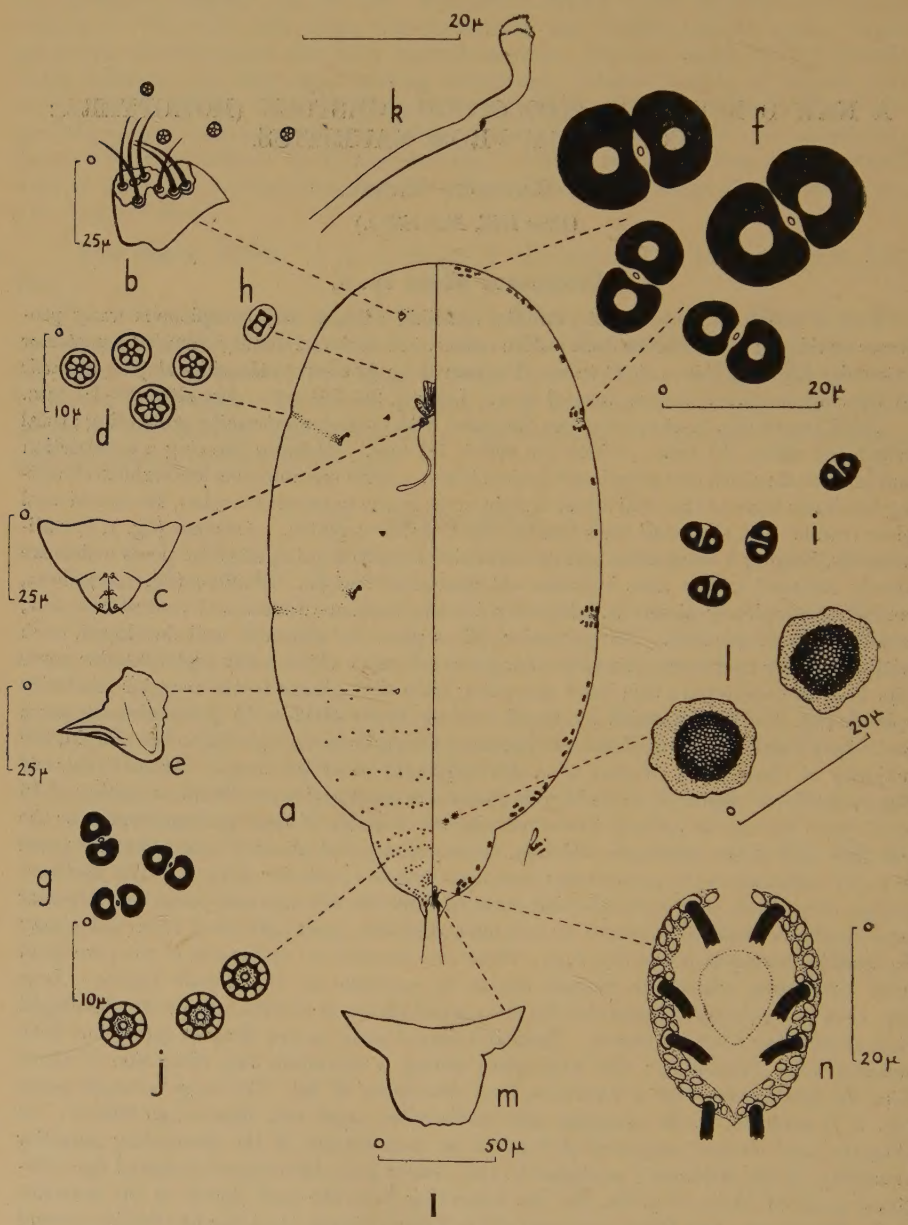

FIG. 1.—*Cerococcus pileae* sp. n.—Adult female: a, Ventral and dorsal aspects showing all types of pores except the ventral 8-shaped pores and the modified 8-shaped pores of the dorsum; the tubular ducts have also been omitted; *b*, antenna; *c*, mentum; *d*, spiracular quinque- and septemlocular pores; *e*, rudimentary third leg; *f*, large 8-shaped pores of the margin; *g*, ventral 8-shaped pores; *h*, modified minute 8-shaped pore; *i*, minute 8-shaped pores of the split type from the dorsum; *j*, multilocular disc pores; *k*, tubular duct; *l*, cribriform plates; *m*, cauda; *n*, anal ring.

Fig. 2.—*Cerococcus pileae* sp. n.—Adult female: *o*, Anterior spiracle with pore band extending to margin; *p*, posterior spiracle with pore band extending to margin; *q*, trilocular thick-rimmed pore of spiracular pore band; *r*, posterior extremity, ventral and dorsal aspects. Embryonic larva: *s*, Antenna; *t*, tarsus and claw; *u*, 8-shaped pore of margin; *v*, small 8-shaped pore of dorsum.

(fig. 1, *g*) are fairly numerous and are mostly found in the marginal and submarginal areas of the ventral dermis ; they are apparently absent in the median area of the prosoma up to the first abdominal segment except for 2 pores situated in the triangular area enclosed by the antennae and mouth-parts. The *ventral dermis* exhibits another type of modified minute 8-shaped pores (fig. 1, *h*) with short filamentar duct, which are found in fair number in the areas where the normal small 8-shaped pores are absent. Minute 8-shaped pores of the split type (fig. 1, *i*) having a maximum long dimension of 6μ are scattered almost uniformly over the *dorsal dermis*. *Multilocular disc pores* (fig. 1, *j*) with 10 loculi, represented by 2 pores situated on each side in the area between the third pair of rudimentary legs and the margin and are in addition present in the ventral abdominal region in seven transverse segmental rows, which on the five anterior segments are more or less single. These pores are distributed as follows : 1st segmental row (i.e. the row just posterior to the third pair of legs) with 20 pores ; 2nd row with 22 ; 3rd with 17 ; 4th with 18 and 5th with 22 ; 6th row, which is interrupted medially, with 20 pores ; 7th row, which is associated with the genital opening, interrupted, forming two marginal groups one on each side of the anal lobes and composed of 7 to 8 pores and a median group composed of 28 pores situated cephalad and laterad to the genital opening. *Tubular ducts* (fig. 1, *k*) quite numerous and conspicuous. *Cribriform plates* (fig. 1, *l*) in two clusters only, each cluster including two roughly circular plates each set in faintly protruding and sclerotized rims. *Anal lobes* (fig. 2, *r*) well developed, tapering, their inner faces sclerotized ; apical seta stout, about 245μ long. *Cauda* (anal plate) (fig. 1, *m*) sclerotized, truncate at tip, about 42μ long and 78μ wide at base. *Anal ring* (fig. 1, *n*) with a double row of small beads and 8 setae, each about 80μ long. One pair of stout blunt-tipped setae, about 50μ long, just prior to anal ring dorsally.

Larva (embryonic) elongate, about 330μ long and 155μ wide (on slide). *Antennae* (fig. 2, *s*) 6-jointed. *Eyes* present. *Claw* of legs (fig. 2, *t*) without denticle ; tarsal and ungual digitules knobbed, each longer than claw. *Mentum* dimerous. No *spiracular spines*. Anterior *spiracles* each with one quinquelocular pore, another quinquelocular pore present between spiracle and margin ; posterior spiracles each with one quinquelocular pore. 8-*shaped pores* in the usual two complete and one incomplete rows on each half of the dorsum ; the marginal row consisting of large pores (fig. 2, *u*) and the other rows of much smaller pores (fig. 2, *v*). Marginal *setae* slender and short. *Anal ring* with a single row of beads and 6 setae. *Anal lobes* developed, with their inner faces sclerotized and each bearing an apical seta. *Cauda* (anal plate) sclerotized.

Locality and host : MAURITIUS : Le Pouce Mt., 2.xi.1948. Collected on stems of *Pilea urticifolia* growing in a very shady place. The same species had already been found in other localities of the island, e.g. Macabé Forest, Cocotte Mt. (27.xi.1938), and on the same host ; in all these cases the individuals were very heavily parasitized by fungus and microhymenoptera.

Material examined : Three adult females, of which one labelled TYPE (in the author's collection) and the others PARATYPES, and a few embryonic larvae mostly attacked by fungus.

ETHIOPIAN CULICIDAE: A DESCRIPTION OF TWO NEW *AËDES* OF THE SUBGENUS *AËDIMORPHUS* THEOBALD, FROM UGANDA.

By Mrs. E. C. C. van Someren.

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Aëdes (Aëdimorphus) smithburni sp. n.

This species belongs to the *tarsalis* group of *Aëdimorphus* (Edwards, 1941) and would run down in Edwards' key to *A.* (*A.*) *tarsalis* Newstead. From this species and the very similar *A.* (*A.*) *phyllolabis* Edwards and *A.* (*A.*) *albocephalus* Theobald, it can be differentiated by the colouring of the hind femur, which is white on the ventral half anteriorly right to the tip, and on the form of the style of the male terminalia which is long, narrow, sinuous and only very slightly swollen at the tip.

Male.—Head.—Scales on vertex narrow and yellow, broad at sides and mainly creamy white, but a small patch of dark scales on either side. Proboscis and palpi dark brown and sometimes paler below; palpi slightly longer than the proboscis. Tori dark brown. *Thorax.*—Reddish brown. Scutum covered with narrow dark brown and golden scales, which tend to form a pattern as follows: Two fairly large spots of golden scales about the middle of the scutum and a band of golden scales round the front margin which reaches back to the scutal angle on either side; two short posterior yellow lines and golden scales on either side of the bare space; a narrow median yellow line, which is sometimes broken and indistinct, running the full length of the scutum. Scattered golden scales tend to obscure the pattern on some specimens. Scutellum covered with broad white scales; *apn* with pale scales, some broad in front and intermediate behind; *ppn* with narrow yellow scales but sometimes 2 or 3 broad scales present; paratergites with broad white scales; post- and sub-spiracular scales absent. *Abdomen.*—Tergites dark brown with basal silvery bands on 3–6; 2 and 7 with small basal lateral white spots; 8 all silvery white. Sternites white with dark apical bands. *Legs.*—Dark brown. All tarsi dark. Fore and mid legs: femora white below for full length and with small white knee spots which are sometimes absent on the fore legs; tibiae pale behind for the full length and with narrow apical white bands. Hind legs: femora with a white apical band and a narrow dark dorsal line to base, anterior surface all white, but for a small dorsal patch of dark scales just before tip, posterior surface white on the basal two-thirds and dark distally; tibiae dark all round and with white apical bands which are twice as long as broad. *Terminalia* (fig. 1).—Coxite long and narrow with a small, narrow, hairy basal lobe which sometimes has one of the hairs near the apex longer and stouter than the rest. The form of the style differentiates this species from any other, being long, narrow, sinuous and only slightly swollen distally. There is one strong, curved spine on the upper edge of the swollen distal portion and a short, curved, pointed leaf at the apex. Apical two teeth of the phallosome large and recurved.

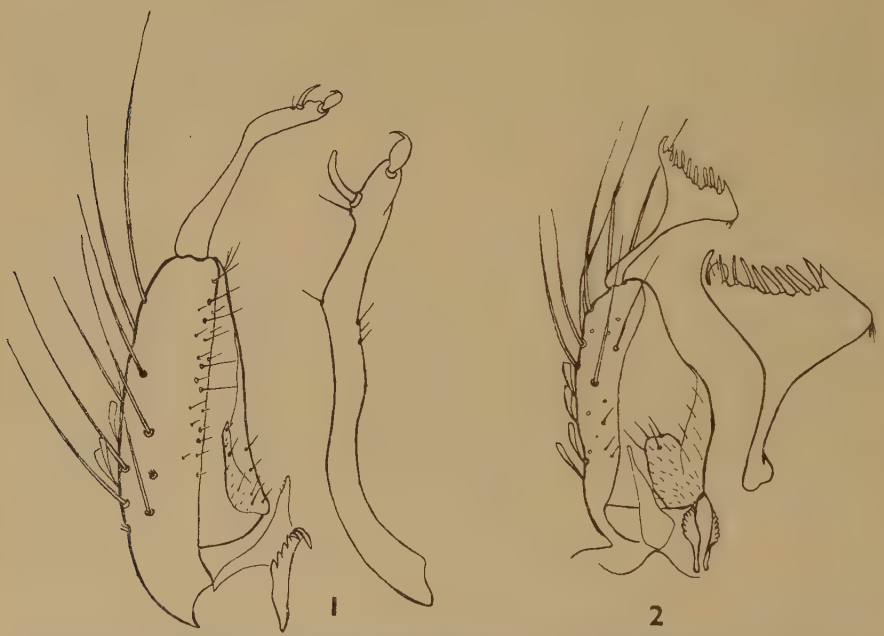
Female.—Determined as this species on the character of the hind femur and is as described for the male, but differs slightly as follows: *Head* with a patch of narrow dark scales in the middle in front and with the patches of dark scales at the sides larger; palpi dark and about one eighth the length of the proboscis; tori light sandy coloured. *Thorax.*—Scutum with the pattern obscured by many scattered golden scales; *apn* with narrow

pale scales only ; *ppn* with some narrow dark scales above, no broad scales present. *Abdomen.*—Tergites unbanded but with large basal lateral white spots on 2–7. *Legs.*—All tibiae dark all round ; fore femora without white knee spots.

Described from holotype, allotype and 7 male paratypes, collected in Bwamba, Toro District, Uganda and named for Dr. K. Smithburn, until recently Director of the Yellow Fever Research Institute, Entebbe, Uganda.

Aëdes (Aëdimorphus) semlikiensis sp. n.

A very light coloured mosquito of the *abnormalis* group of the *Aëdimorphus* (Edwards, 1941). The integument is a bright orange brown and is almost



Figs. 1–2.—(1) *Aëdes* (*Aëdimorphus*) *smithburni* sp. n.—male terminalia. (2) *Aëdes* (*Aëdimorphus*) *semlikiensis* sp. n.—male terminalia.

entirely covered with narrow golden scales but sometimes a darker patch of pale brown scales is present on either side at the scutal angle.

The pale colour of the scutum may probably separate this species from those of this group with the same combination of narrow scales on the vertex and broad scales on the scutellum.

The male terminalia are very similar in form to those of *A.* (*A.*) *abnormalis* Theobald, but can be differentiated on the character of the style, which has a hairy projection on the inner surface like that of *A.* (*A.*) *wigglesworthi* Edwards. The spines on the distal edge of the style are not spatulate and this together with the short horn and greater number of spines will separate the males of this species from *wigglesworthi*.

Male.—Head.—Decumbent scales of the vertex all narrow and pale yellow, upright scales pale; broad creamy white scales at the sides. Tori pale. Proboscis and palpi dark brown; palpi longer than the proboscis by little more than the terminal segment, which has few hairs below. *Thorax.*—Integument orange brown. Scutum mainly covered with narrow golden yellow scales but sometimes a small patch of brown scales in the scutal angle. Pleurae without definite dark markings; *apn* with some broad flat creamy white scales in front, intermediate scales behind; *ppn* with narrow golden scales; paratergites with broad flat pale scales; few or no scales on post- and sub-spiracular areas. Scutellar scales all broad, flat and creamy white. *Legs* brown. All femora extensively pale creamy yellow below posteriorly; hind femora with small creamy knee spots, also pale anteriorly except for a dark dorsal line which gradually widens to fill the dorsal half of the anterior surface at tip. All tibiae pale creamy yellow below and with creamy yellow apical spots, that on hind tibiae as broad as long. *Abdomen* dark brown above, with fairly broad pale yellow basal bands on tergites 2–7, 8 all pale; sternites pale with narrow dark apical bands. *Terminalia* (fig. 2).—Coxite wide in the middle; basal lobe small, hairy, and with 3–4 hairs on the apex stouter and longer than the rest; apical portion of style very broad, with a hairy membranous expansion, and 8 apical spines, which are blunt or pointed but not spatulate; horn very short.

Female.—The female is not known for certain, but some females collected at Mongiro probably belong to this species. These specimens agree with the above description and have the broad pale scales on the *apn*. They differ by having the erect scales on the vertex dark and by having very small patches of flat dark scales on each side of the head. The abdominal tergites are unbanded, only large, lateral, basal, yellowish patches being present, and the mid-femora have small but distinct pale knee spots.

Described from holotype, and 7 male paratypes, from Bunyamwerima, Semliki River, Bwamba, Toro District, Uganda.

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Book Notice.

A Pocket Book of British Insects. By George E. Hyde. 8vo. London (Adam and Charles Black), 1949. Pp. 144, 16 col. pls., 72 half-tones. Price 7*s.* 6*d.*

One of the *Pocket Book* series of popular guides to groups of animals and plants. The coloured plates give a selection of examples of the principal Orders, and the photographs show particular species, often in a natural setting. The text mentions the most important, or most conspicuous, families, using common names where these are available. Something is indicated of the biology of members of the family.

While in general the book is confined to British insects, the plates include examples of a number of the more conspicuous exotic families.

ON *PSYCHODA ACUTIPENNIS* TONNOIR, A SEMI-APTEROUS, ISLAND-LIVING SPECIES.

By G. H. Satchell, B.Sc., Ph.D., F.R.E.S.

(Department of Zoology, Otago University, Dunedin, New Zealand.)

In 1920 Dr. A. L. Tonnoir described a curious species of *Psychoda*, *P. acutipennis*, from the Bounty Islands, east of New Zealand. His material, preserved in alcohol and loaned from the British Museum, had originally been reared from larvae collected in guano deposits, by Dr. L. Cockayne in 1903. Whilst looking through a collection of Psychodidae lent to me from the Canterbury Museum, I recently found three further specimens of this fly, which, being pinned, showed certain features not apparent in Tonnoir's alcoholic material. These new specimens are also from the Bounty Islands, and were clearly reared from material collected by Dr. Cockayne at the same time as the British Museum material. The Bounty Islands are a group of barren low rocks lying 490 miles east of New Zealand, completely devoid of vegetation, and with no part free from the scouring action of the waves thrown up by the frequent gales. It is thus a matter of some interest that a species of *Psychoda* should have colonized such an inhospitable environment. Of greater interest, however, is that the species has the wings much reduced, a feature characteristic of other insects living on wind-swept islands, but not so far noted in this family. Tonnoir's paper consists of a straighforward description of the species; he was clearly unaware that the Bounty Islands were in any way peculiar as an environment for *Psychoda* and was frankly puzzled by the reduced wings. I propose, therefore, to redescribe the species adding certain details not included in Tonnoir's account, to retail what is known of the conditions on these bleak and seldom-visited islands, and to consider certain peculiarities of this species as modifications to these conditions.

Psychoda acutipennis Tonnoir.

Male.—Antenna 16-segmented, two-thirds length of wing; basal flagellar segment amphora-shaped, with neck two-thirds length of basal bulb; succeeding segments with neck progressively shorter, and bulbs more nearly spherical; segments 11, 12 and 13 with very short necks; last three segments diminutive of progressively diminishing diameter; terminal one subspherical; ascoids small, with short, pointed anterior arms and posterior arms much reduced or absent; verticils of strong thick hairs. Head with eyes much less developed than usual, separated by a distance equal to length of first antennal segment; maxillary palpi with first three segments subequal, last one slightly longer and narrower. Thorax with brownish-black integument; wing much shorter and narrower than usual, 2·2 mm. long, scarcely reaching beyond tip of abdomen; reduction evident in vane but not in basal part, which occupies one-third to one-quarter of total extent of wing; all veins much compressed together; anterior fork slightly past posterior fork; cubital much thickened; haltere with capitellum much elongated, longer than pedicil. Legs thicker and more robust than usual; terminal tarsal joint incrassate; claws long and well developed. Abdomen stout and long, with dark chocolate-brown integument. Hypopygium very prominent; coxites massive, much swollen ventro-laterally, style

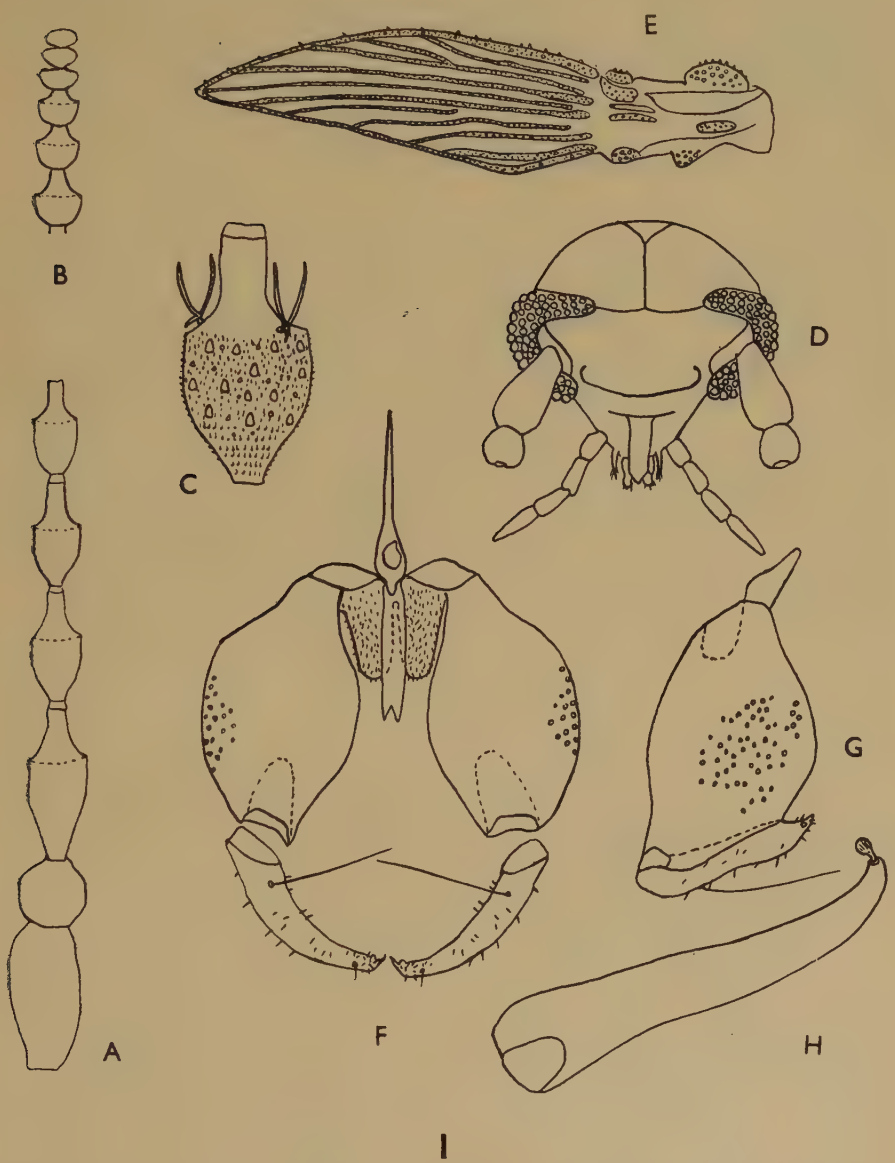

FIG. 1.—*Psychoda acutipennis* Tonn. A, Basal six joints of antenna; B, terminal six joints of antenna; C, eighth antennal joint; D, head, dorsal view; E, wing; F, hypopygium from above; the styles have been disarticulated and turned slightly inwards; G, forceps, lateral view; H, cercopod.

jointed so that it can fold flat against coxite ; style curved, terminal third parallel-sided, hooked at tip, with a small cylindrical process immediately behind hook ; numerous small setae scattered over surface ; one large seta inserted near base. Aedeagus symmetrical, pointed in intact specimens but showing a paired structure under slight pressure ; ventral to aedeagus are paired pilose lobes. Cercopods not swollen basally, gently tapering, terminating in a single, small, rounded, spoon-like retinaculum.

Locality : Bounty Islands. June, 1903, 3 ♂♂ (*Dr. L. Cockayne*).

Certain features mentioned in the above account can be dealt with in more detail before the habitat is further considered. Though the reduction of the wings gives the impression of a small fly, the body is actually larger than is usual in the genus. Pinned *Psychoda* usually show the abdomen as a shrunken structure, but in *P. acutipennis* it is large and prominent and shows little sign of shrinkage. This is probably due to the more heavily sclerotized body wall. The wings in the majority of *Psychoda* are at least twice as long as the abdomen, and the basal region, i.e. that part proximal to the line of folding, is generally about one-sixth the total wing length. In *P. acutipennis* the wings are almost equal to the abdomen in length and all this reduction has occurred in the vane or disc. As a result the costal margins of the wings do not meet above the abdomen, as they usually do, giving the typical pent-roof appearance. That the base of the wing has not been reduced may indicate that its function as a bearer of sensory hairs requires its persistence even when the normal function of the wing vane has gone. There is one very prominent group of such hairs close to the base of the wing on the costal margin. Compared with other species of *Psychoda* the legs of this species are at least twice as broad in the distal two-thirds of each joint. The terminal tarsal joint is more swollen than those preceding it, and bears the large claws. These features combine to give the species an appearance very different from that usual for the genus. Their significance will be clearer, however, when the conditions on the Bounty Islands have been considered.

The Bounty Islands are one group of a number collectively known as the Subantarctic Islands of New Zealand. The Bounties are the least known and least accessible of the various groups, and the 1907 expedition, to the reports of which (1909), we owe most of our knowledge of these subantarctic islands, failed to visit the Bounty Islands. Consequently, it is from the accounts of various individual visitors, particularly " Dougall " (1888), Cockayne (1903) and Oliver (1930) that information must be drawn. The group consists of a semicircle of twenty islets situated in 44° 43′ South latitude and 179° 5′ East longitude. At no point are they more than two hundred and ninety feet high and they are swept completely by the waves during the gales which frequently occur. They consist of bare granite completely devoid of vegetation apart from the marine alga, *Durvillaea*, which grows in the lower part of the intertidal zone, and an inconspicuous green alga sometimes present on the rocks. From September to April they are populated by thousands of the Big Crested Penguin, *Eudyptes sclateri* Buller and the movements of the feet of these birds have, in the course of time, polished the rock to a glassy smoothness. Oliver (1930) gives a vivid account of the appearance of the islands during the breeding season, and describes how every crevice becomes filled with semi-liquid

guano which collects in huge quantities. During the winter the rain and waves wash off most of the guano, but some remains behind in crevices under the stones. Cockayne (1903) describes how he visited the islands in winter (June) and found an interesting community of insects and spiders under the stones. He collected these, and they were, apart from *P. acutipennis*, identified by the various authorities who worked over the material from the 1907 expedition. The animals collected were a sandhopper, *Orchestia bollonsi* Chilton, a beetle, *Thomosis guanicola* Broun, a Dolichopodid, *Aphrosylopis lineatus* Lamb, the *Psychoda* described in this paper, and a spider, *Pacificana cockayni* Hogg. In addition, a wingless grasshopper, *Ischyroplectron isolatum*, had been collected from under stones and described by Hutton in 1894. *Psychoda acutipennis* was collected as larvae from the guano, and subsequently bred out.

That a species of *Psychoda* should colonize the layers of guano is not surprising. I have myself reared *Psychoda severini* Tonnoir subsp. *parthenogenetica* Tonnoir from the dung of domestic poultry in Britain, and species of this genus are recognized as being very plastic in their ability to colonize various types of decaying organic matter (Satchell, 1947). It is, however, of interest that not only this species, but a community of five species manages to maintain itself on an isolated barren island virtually devoid of organic matter, apart from the guano on which they are dependent, and which in turn depends upon the seasonal arrival of the birds. Moreover, whilst *Thomosis guanicola* and *Aphrosylopis lineatus* may perhaps be more recent arrivals, *Psychoda acutipennis* has presumably been there a sufficient length of time for its wings to have become substantially reduced.

The reduction of wings in island-living species of insects is a well-known phenomenon, and is met with on some of the other islands in the New Zealand Subantarctic group. On the Auckland Islands is an almost wingless Tipulid, *Zaluscodes aucklandicus* Lamb, on the Campbells is an Anthomyid, *Coenosia filipennis* Lamb, and a Phycodromid, *Icaridon nasutum* Lamb, whilst on Macquarie Island is a Dolichopodid, *Schoenophilus pedestris* Lamb. This is the first time the condition has been recognized in the PSYCHODIDAE however. The development of the semi-apterous state is thought to be an adaptation preventing the species from being blown out to sea, and the large number of semi-apterous species of insects in the Subantarctic Island fauna reflects the fact that they are much subject to north-westerly gales and high winds. Flies of the genus *Psychoda* are weak fliers and, with their fluffy bodies and fluttering motion, tend to be carried along by the wind (Johnson, 1914 ; Headlee and Beckwith, 1918 ; Fair, 1934). There would thus be a greater tendency for small-winged mutants to be favoured under windy conditions than would be the case with species of insect capable of more powerful and sustained flight. The much reduced eyes of *P. acutipennis* are to be expected in a species in which the wings are so reduced that flight is, almost certainly, no longer possible. It seems highly probable that mating and egg-laying occur in the crevices under the stones, without the fly emerging into the open at all, since *P. alternata*, a fully-winged species capable of normal flight, behaves thus in the filter beds of sewage works during periods of inclement weather (Lloyd, 1943). The well-developed legs armed with strong claws, present in *P. acutipennis*, may also be regarded as reflecting the necessity for a firm hold on the ground during high winds, whilst the heavily sclerotized cuticle and broad abdomen also give

the impression of a robustly constructed insect. The significance of the much enlarged halteres is difficult to see, however.

Much of interest remains to be learnt of this curious species and it is hoped that the future may shortly provide an opportunity to visit the Bounty Islands. I should like to express my indebtedness to Mr. R. R. Forster for the loan of the PSYCHODIDAE in the collections of the Canterbury Museum.

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A NEW GENUS AND TWO NEW SPECIES OF, AND MISCELLANEOUS NOTES ON AFRICAN ACROCERIDAE (DIPTERA).

By Curtis W. Sabrosky.

(*Bureau of Entomology and Plant Quarantine, Agriculture Research Administration, United States Department of Agriculture.*)

In a collection of African Acroceridae (Cyrtidae, Oncodidae), submitted for determination through the kindness of Dr. F. van Emden, of the Commonwealth Institute of Entomology, were two new and unusual species, one of which represents a new genus and the other a genus hitherto known only from a single species from Brazil. Species of this family of spider parasites are so rare in most collections, even in areas whose faunas are well known, that undoubtedly many undescribed forms await discovery.

Of the several names in use for this family by different authors, the name Acroceridae is adopted here as the oldest proposed family name for the group (Acrocerides Leach, 1815; Acroceridae Leach, 1819), aside from certain names which were not based on included genera (Inflata, Vesiculosa). In several recent papers I used the spelling Acroceratidae, but the discussion by Grensted (1948, *Ent. mon. Mag.* **84**: 280–281) seems so eminently reasonable that I have returned to the simpler spelling for this and similar names.

Type material of the two species has been returned to the Commonwealth Institute of Entomology for ultimate deposit in the British Museum.

Meruia gen. n. (Figs. 2, 2*a*).

Near *Pterodontia*, resembling it in having the head small in proportion to the enlarged thorax, eyes holoptic and densely covered with hairs, three ocelli, antennae inserted near the oral opening (probably of the same type as in *Pterodontia*; only the three segments of one antenna are left and the apical bristles may or may not have been present), mouthparts aborted and oral opening small, humeri well separated, and squamae large and covered with fine hairs.

It differs from *Pterodontia* in having a distinct collarlike prothorax behind the head; thorax strongly humpbacked (fig. 2); metanotum high, the scutellum far removed from the abdomen; abdomen narrow in proportion to its length, one and one-half times longer than broad (not broad and strongly convex as in *Pterodontia*); thoracic and abdominal hair short and more or less appressed (not long and erect as in *Pterodontia*); tibiae without apical spines; wings narrowed toward base, anal areas and alulae undeveloped; wing venation as figured (fig. 2*a*), resembling that of *Pterodontia* in a general way, but distinguished principally by the extreme curvature of the ultimate sections of second and third veins (in *Pterodontia* the second vein curves in an opposite manner, being anteriorly concave, and the third vein is approximately straight) and by the presence of the basal portion of fourth vein (M_{1+2}), which appears to divide the discal cell into two cells, the anterior one especially narrow. The presence of this vein causes the central area of the wing to resemble such genera as *Cyrtus* and *Opsebius*; in *Pterodontia* its absence leaves one large cell in the central area.

From the general configuration of the wing and the slight but distinct bending forward of costa, I suspect that males of this genus, as in *Pterodontia*, may prove to have a costal tooth.

Genotype : *Meruia somereni* sp. n.

This genus falls in the ACROCERINAE, with an undoubted close relationship to *Pterodontia*, but its curiously humpbacked habitus is reminiscent of the PHILOPOTINAE. The presence of a distinct prothorax is also unusual. It should be noted that the " collar " so formed is not the same as that which is characteristic of the PHILOPOTINAE, the latter being formed by the great expansion of the humeri to form prothoracic lobes meeting at the midline.

Meruia somereni sp. n. (figs. 2, 2*a*).

General colour dark brown, shading to black on portions of the mesonotum and pleuron ; head entirely black ; body with testaceous areas as follows : Humeri, margins of postalar calli and an adjoining spot on mesonotum, a narrow crossband on each side of mesonotum at approximately the normal position of the mesonotal suture, two narrow elongate spots on the prescutellar slope bordering a narrow median black stripe, and a median row of yellow spots on the abdomen, one spot on the posterior half of each of segments 2 to 6, small on segment 2 and becoming larger on succeeding segments, the sixth predominantly testaceous ; abdominal sternites black, with narrow whitish incisures ; metanotum smooth and polished black ; legs with coxae, trochanters, and proximal two-thirds of femora dark brown to black, rest of legs bright yellow except for black claws and extreme apex of last tarsal segment ; squamae brown with testaceous margins ; halteres bright orange ; wings yellowish with deep yellow to testaceous, strong and distinct veins, the membrane infuscated at the base of the wing and throughout the submarginal cell ; hairs testaceous to brown, on the tibiae and tarsi yellow to whitish yellow.

Length of body, 7 mm. ; length of wing, 7 mm.

Holotype female, KENYA : Meru, July, 1943 (*van Someren*).

The species is named in honour of Dr. V. G. L. van Someren, the collector, who has captured many interesting species of Diptera in East Africa.

Terphis Erichson.

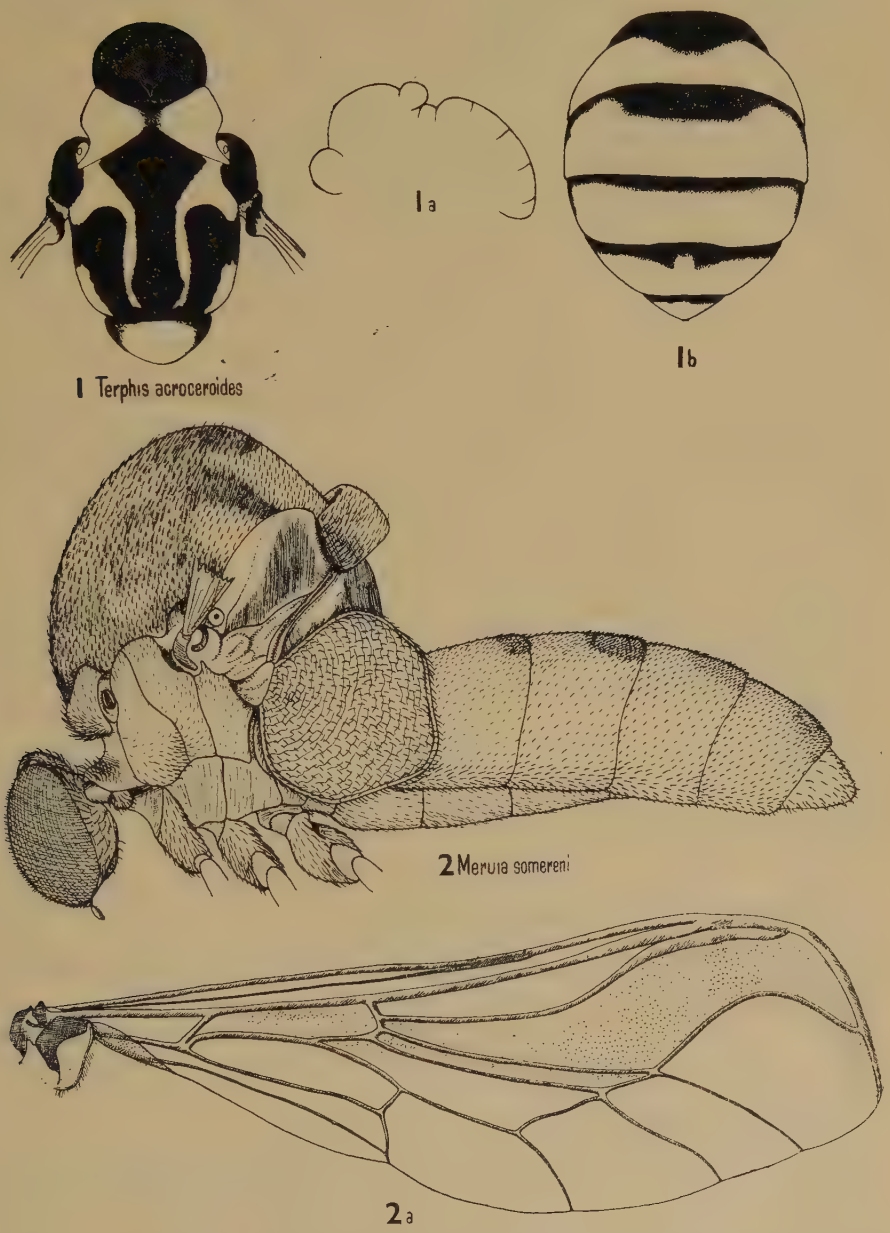
Erichson, 1840, *Entomographien*, I : 168, pl. 1, fig. 10.

Type, *T. nodosa* Erichson, Brazil. (Monobasic).

Subfamily PHILOPOTINAE, but unique in the subfamily in having the oral opening minute and the mouthparts rudimentary and scarcely visible ; eyes bare, contiguous for a considerable distance both above and below the antennae ; antennae small, third segment ending in a slender style, as in *Philopota*, inserted on the lower margin of the head in a section of front little larger than the bases of the antennae ; thorax moderately convex but not extraordinarily humpbacked as in *Philopota* and *Megalybus* ; venation rather incomplete, like that of *Philopota*, but the third and fourth veins even shorter and weaker than in that genus.

Although some question might naturally be raised by the reference of a new African species to a Brazilian genus, the characteristics of the species correspond closely to those described by Erichson for the genus *Terphis*. The only difference of any consequence that I can find is in the rows of tubercles or nodules on the abdomen of *T. nodosa*, which Erichson himself regarded merely as a specific character (see note on p. 52).

The other genera of PHILOPOTINAE, *Thyllis*, *Philopota*, *Megalybus* and *Helle*, all have the proboscis elongate and extended beneath the body ; all but



Figs. 1, 1*a*, 1*b*.—*Terphis acroceroides* Sabrosky, dorsum of thorax, outline of body in profile, and dorsum of abdomen. Figs. 2, 2*a*, *Meruia somereni* Sabrosky, side of body with wings and legs omitted, and wing venation. Drawings by Miss Addie Egbert, Bureau of Entomology and Plant Quarantine, Washington, D.C.

Thyllis have the eyes contiguous only above the antennae ; and all but *Helle* have the eyes pubescent or hairy.

Terphis acroceroides sp. n. (Figs. 1, 1*a*, 1*b*).

Bright yellow and black species ; head black, including the small area of front just above the antennal bases ; antennae testaceous ; mouthparts rudimentary, yellow ; dorsum of thorax with yellow and black pattern as figured (fig. 1) ; pleura entirely black ; abdomen predominantly yellow, the first tergite black, remaining tergites with narrow black fasciae along their anterior margins as figured (fig. 1*b*), the fasciae widening at the extreme sides almost to the posterior edges of the segments ; venter of abdomen yellow ; halteres deep yellow ; squamae yellow ; wings clear with testaceous veins and yellow-tinted membrane ; legs chiefly yellow, the coxae black and the femora slightly browned on basal halves.

Length, 4 mm.

Holotype and one paratype, both males, BELGIAN CONGO : Tenke, Katanga, 30.vii–9.viii.1931 (*Miss A. Mackie*).

The general habitus of this species, as far as colour and colour pattern are concerned, remind one a great deal of many species of the genus *Acrocera*.

Pterodontia sp. (♀ *smithi* Johnson ?).

Pterodontia Smithi Johnson, 1898, *Proc. Acad. nat. Sci. Philad.* **1898** : 161.

♀, Salisbury, Mashonaland (*G. A. K. Marshall*).

The species was described from Somaliland, based on the male sex, and was subsequently recorded by Brunetti (1926, *Ann. Mag. nat. Hist.* (9) **18** : 577) from Nyasaland, probably also from males. The present specimen, a female, differs slightly in the colour pattern of the abdomen, but that difference may be normal sexual dimorphism. However, another species may be involved, but additional material will be necessary to determine this. The thoracic pattern and wing venation are the same as in *smithi*, with the usual sexual difference of the toothed costa in the male.

I have seen one of the two original specimens (cotypes) of *smithi* in the Academy of Natural Sciences, Philadelphia, Pennsylvania, from Crorgora, North-East Africa, September 13, 1894. Though it bears a " Type " label, I know of no published designation to that effect ; it is accordingly here designated as the lectotype of *Pterodontia smithi* Johnson.

Ogcodes Latreille.

Latreille, 1796, *Précis Car. Ins.* : 154.
(= *Oncodes* of authors, emendation.)

By 1920, five species of this genus had been described from tropical Africa (*caffer* Loew, 1857, *clavatus* Becker, 1909, *cepisetis* Speiser, 1910, *alluaudi* Becker, 1914, and *coffeatus* Speiser, 1920). Brunetti (1926, *loc. cit* : 590–606) added eight new African species and included them in a long key to *Ogcodes* (*Oncodes*), but there was no mention of any of the five older species and I suspect that some synonymy is involved.

Two other factors that make synonymy likely are (1) the extreme variability of certain colour characters used by Brunetti, especially the colour of the humeri and postalar calli, and (2) sexual dimorphism in the width of the bright

yellow bands on the hind margins of the abdominal segments (*cf.* discussion by Sabrosky, 1944, *Amer. Midl. Nat.* **31** : 387–388, on the Nearctic *Ogcodes*).

Long series of associated males and females, studied in conjunction with a critical review of the types, will be necessary before most of the available names in this genus can be properly evaluated. Lack of such material limits me to a few notes that must necessarily be regarded as somewhat tentative.

Although the spelling *Oncodes* is widely used, I believe in adhering to the original spelling of the name. Incidentally, the emendation *Oncodes* was credited by Neave (1940, *Nomenclator Zoologicus* **3** : 418) to Blanchard (1840), but the spelling was apparently first suggested by Meigen (1822, *Syst. Beschr.* **3** : 99).

Ogcodes distinctus Brunetti.

Oncodes distinctus Brunetti, 1926, *Ann. Mag. nat. Hist.* (9) **18** : 597 (Kenya).

2 ♀♀, Ukerewe, Tanganyika (*Father Conrads*).

The characteristically patterned abdomen, well described by Brunetti, easily distinguishes this species from others having a vittate thorax. Likewise the scutellum stands out because of the large, subquadrate, polished black spot on the disk and the black venter, the two areas separated by a broad marginal band of yellow, in one specimen narrowly joined at the extreme apex of the scutellum. The veins are strong for an *Ogcodes* species, the stub of r-m cross-vein is strong and dark, and vein M_1 is distinctly developed on almost its entire length. The hind tibiae are equibroad throughout. Two additional features that may help to separate it from other vittate species of *Ogcodes* are the dark brown squamae with heavy black margins, and the basal portion of the wings browned on the anterior half.

Whether the name will fall as a synonym of one of the older species remains to be seen when variation is studied, but at least the present distinct specimens may safely be recorded as Brunetti's species.

Ogcodes clavatus Becker.

Oncodes clavatus Becker, 1909, *Bull. Mus. Hist. nat. Paris* **15** (3) : 113 ; Becker, 1910, *Ann. Soc. ent. Fr.* **79** : 22 (♂ ; British East Africa).

Oncodes cepisetis Speiser, 1910, *In* Sjöstedt, *Kilimandjaro-Meru Exped., Stockholm*, **2**, Abt. 10 (4) : 74–75 (Mt. Meru). **(Syn. n.)**

Possible synonymy (from the description) : *Oncodes nyasae* Brunetti, 1926, *loc. cit.* : 591, 598 (Nyasaland).

39 (35 ♂♂, 4 ♀♀), all from Kenya, as follows : ♀, Nairobi, February, 1933, " caught on Croton " ; ♂, Nanyuki, May, 1948 (*van Someren*) ; 3 ♂♂, " Kenya Colony " (*C. B. Symes*) ; 34 (31 ♂♂, 3 ♀♀), Naivasha (*H. J. A. Turner*), collected as follows : 1937, 9 ♂♂ in July ; 1939, 9 ♂♂, 2 ♀♀ in September, 2 ♂♂ in November ; 1940 : 1 ♂ in February, 6 ♂♂, 1 ♀ in March, 3 ♂♂ in April, 1 ♂ in May.

The excellent series of 39 specimens has made possible an analysis of variation in this species, at least in the male sex, and has strengthened the suspicion that there may be even more synonymy than is indicated above.

Basically, the species has the thorax with bright orange ground-colour and three broad black stripes, the median stripe extending the full length of the mesonotum, though

narrowing posteriorly, the lateral stripes shorter and broader, ending anteriorly opposite the wing bases ; scutellum black with pale basal corners ; humeri and postalar calli more or less whitish yellow ; abdominal tergites 2 to 5 with whitish-yellow fasciae along their posterior margins, the fasciae broad in the male (about one-fourth the width of a segment), narrow in the female, in the males the rest of the segment reddish brown to black, varying from pale specimens in which the colour on tergites 2 to 4 is broken up into three rows of spots, including a median row of large subquadrate black spots and a row of irregular spots on each side, to dark specimens in which there appears to be solid dark brown to black bands on segments 3 and 4 and a very broad median spot on segment 2 ; sternites brown on anterior half, whitish yellow posteriorly ; squamae white to yellowish with brown margins ; legs predominantly testaceous, all tarsi, extreme bases of femora, and hind tibiae on outside, black ; wing hyaline, vein M_1 present and nearly complete.

Some variation in the thoracic pattern indicates that occasional heavily infuscated individuals may not show definite stripes, and may thus have been described as different species. The females are generally darker than the males, but I believe that all may be referred to this species. One female (Naivasha, September, 1939) shows the same striping as the males, but the other three have the mesonotum predominantly black, with no evidence of stripes except for yellow areas mesad and posteromesad of the humeri that demarcate the anterior part of a median stripe.

The size of the males in the present series ranges from 4 to 7 mm., with few examples of either extreme.

The distally enlarged hind tibiae described for *clavatus* and *cepisetis* are found in all the males, though varying somewhat in degree of development, but in the females the hind tibiae are slender and equibroad throughout. If I am correct in associating those few females with the long series of males, the enlarged hind tibia is a sexual character applying only to males, at least in this species.

Note.—Since the above was written, I have discovered in miscellaneous material in the U.S. National Museum a male of the rare *Terphis nodosa*, Itaquaquecetuba, Sao Paulo, Brazil, May 20, "hovering" (C. H. T. Townsend). Direct comparison of the two species confirms the above conclusions (p. 48).

TWO NEW SWISS SAWFLIES, A *TENTHREDO* AND A *FENELLA* (HYMENOPTERA: TENTHREDINIDAE).

By Robert B. Benson.
(*British Museum, Natural History.*)

I have lately received from M. de Beaumont of the Musée Zoologique, Lausanne, specimens of an undescribed Swiss species of *Tenthredo* belonging to the *arcuata* group, which was dealt with by Benson, 1940 (*Ent. mon. Mag.* **76** : 231–5).

I also take this opportunity of describing a new Swiss species of *Fenella* discovered by my wife and me in Upper Valais in 1935.

Tenthredo beaumonti sp. n.

♀. Black with the following parts yellowish-white ; palps, labrum, mandibles (except brownish tips), clypeus, 1st segment of antenna ; most of pronotum, tegula, front portion of mesoscutellum (but not post-scutellum), elongate spot on hind margin of mesepisternum and another on hind margin of mesepimeron, metapleura, whole of the front and middle legs (except for the reddish-brown apices of the tarsomeres and the black extreme bases of the coxae) and the hind legs (except for the black basal half of the coxa and the upper side of the basal tarsal segments, and for the reddish apex to the tibia) ; an unbroken band covering almost all the 1st tergite from the apex, bands on the apices of all the other tergites broadening laterally, on the 2nd and 3rd tergites broken broadly in the middle, on the 6th and 7th in a continuous apical band narrowing medially, 8th and 9th entirely yellow, sternites with all the apical margins broadly yellow. *Wings* subhyaline ; stigma, costa and front part of subcosta of fore wing yellow ; rest of venation yellow to piceous.

Head slightly swollen behind the eyes and shining with scattered punctures, slightly rugose on the inner orbits below ; mouthparts normal ; labrum broadly and bluntly rounded in front ; frontal crests prominent above antennal sockets, where a flange projects further forward than the level of the front of the eyes ; malar space shorter than the diameter of the front ocellus and about half the apical width of the 2nd antennal segment ; ocelli arranged in an almost right-angled triangle ; antenna with segment $3 > 4 + 5$; 7 and 8 transverse.

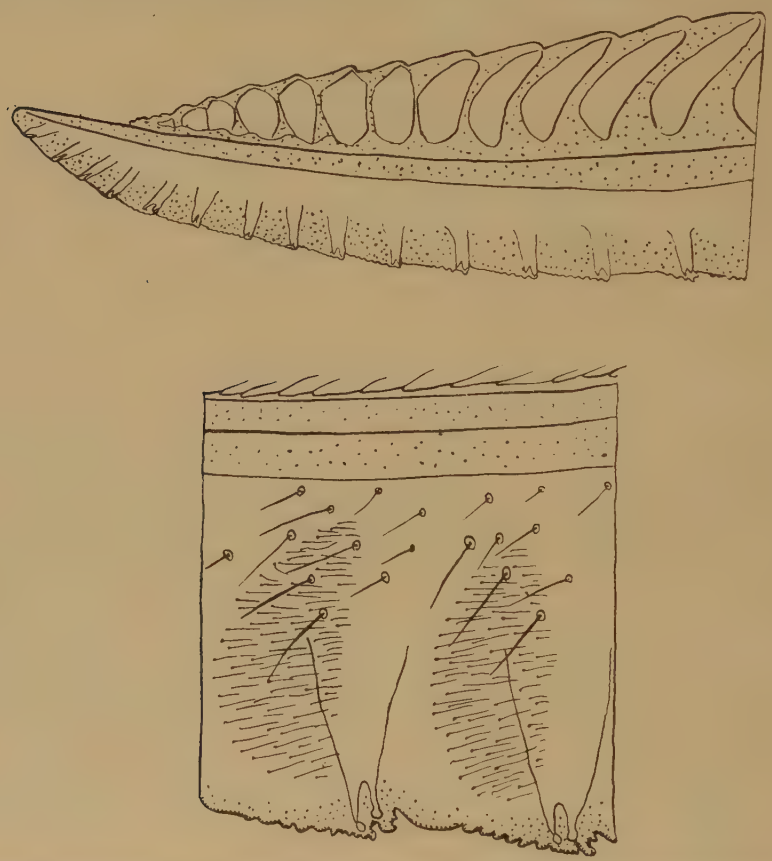
Thorax shining between scattered punctures which become dense and rugose on post-scutellum and upper mesopleura. Legs with inner hind tibial spur about half as long as basitarsus ; hind basitarsus equal to about $2\frac{1}{2}$ following tarsomeres. *Abdomen* finely and transversely rugulose above from the 2nd segment ; hypopygium shallowly emarginate each side of the middle as in *T. perkinsi* Morice (cf. *Ent. mon. Mag.* **76** : fig. 2, p. 235, 1940) ; saw with very shallow teeth (see figs.). *Pubescence* as in *T. arcuata*, mainly pale on head and thorax, and on outer upper orbits not longer than width of 2nd antennal segment. *Length* 8·5–10·5 mm.

♂ as ♀, except for the sexual characters and that on the thorax there is a pale spot on the post-scutellum, the coxae are entirely yellow, the apices of the hind femur and the hind tibia are marked with black, the pale band on the first tergite is constricted laterally and is only present as a narrow medial band, the 2nd, 6th, 7th and 8th tergites are entirely black medially through the constriction there of the apical marginal bands, while the under-

side of the abdomen is entirely yellow; and that the inner hind tibial spur is only about three-eighths as long as the basitarsus. *Length* 10 mm.

SWITZERLAND.—Valais: B. St. Pierre, 1 ♀ (Type), fin ix.1916, Coll. Cerutti; Geuroz, 1 ♀, 1.viii.1940 (*J. de Beaumont*). 1 ♂, Coll. E. Favre.

NEUCHATEL: Corcelles, Environs de Neuchatel, 3 ♀♀, 24.viii.1912, Coll. B. Jacob. Without precise data, 1 ♀, "4918," det. "Allantus sulphuripes."



Tenthredo beaumonti sp. n. Apical portion of saw and saw-support, with enlarged section of saw to include 9th and 10th teeth.

Type and 3 paratypes, including ♂ in the Musée Zoologique, Lausanne; 3 paratypes in British Museum (Natural History).

This species in the female is distinguished from all others in the *arcuata* group by the very shallow ventral teeth of the saw, by the obtuse apex to its labrum and by its more pronounced frontal crests; in the form of the hypopygium it resembles *T. perkinsi* Morice and *schaefferi* Klug; in colour it resembles the southern form of *T. sulphuripes* Kriechbaumer, having in the female entirely pale hind tibiae; in its short malar space it resembles *perkinsi* and *schaefferi*.

Fenella famosa sp. n.

Fenella sp. Benson, 1941, *Proc. R. ent. Soc., Lond.* (B) **10**: 90.

♀. *Black* to piceous with the following parts dark brown: Labrum, apices of femora, tibiae except for extreme apices, and bases of tarsomeres. *Wings* subhyaline with piceous to brown stigma and venation.

Antenna 16-segmented and about twice as long as breadth of head; 3rd segment little longer than 4th (1·3 : 1); 4th, 5th and 6th subequal in length; and all segments longer than broad. *Head* as in *Fenella nigrita* (Westwood), i.e. clypeus subtruncate, slightly roundedly emarginate in front; malar space about half diameter of front ocellus; frons very smooth and rounded, slightly raised above level of inner orbits, but without any suture demarcating it; frontal groove narrowed between the antennae; ocelli in a low obtuse-angled triangle; a hind ocellus about as far from the back of the head as it is from a front ocellus; but differing from *nigrita* in having a small, round, deep puncture in the middle of the frontal groove.

Thorax and abdomen normal; ovipositor about as long as a hind femur (without the 2nd trochanter); sawsheath in lateral view suberect and rounded behind.

Surface *punctation* almost obsolete except for a few follicles on the clypeus and pronotum, and except for the vague transverse coriaceous surface of the tergites. *Length* 3 mm.

Switzerland.—Valais: Les Haudères, 4000–5000 ft., 1 ♀, 6–27.vi.1935 (*J. E. and R. B. Benson*).

This species is very similar to *F. judaica* (Forsius), from Palestine, which likewise has 16-segmented antennae, but in *judaica* the 3rd segment is 1½ times as long as the 4th, the frons is more definitely punctate, but the conspicuous central median puncture in the frontal furrow is absent and the legs are infuscate all over. All the other known species have 11–14 segmented antennae, only about 1½ times as long as the breadth of the head and likewise lack the frontal puncture referred to.

Summary.

Two new Swiss species of Tenthredinidae are described: (*a*) *Tenthredo beaumonti*, belonging to the *arcuata* group; and (*b*) *Fenella famosa*, closely related to *F. judaica* (Forsius).

ATOCONEURA EXTRAORDINATA, A NEW SPECIES OF LIBELLULINE FROM UGANDA.

By Lt.-Col. F. C. Fraser, I.M.S. (Retd.).

Among a large collection of Odonata made by Professor G. D. Hale Carpenter in 1926 I found a few specimens of *Atoconeura biordinata* Karsch, and one specimen which possessed so strange an inferior anal appendage that I came to the conclusion that it must be a deformity. Recently another specimen with a similarly shaped inferior appendage has turned up, so that there is no longer any doubt that these two represent a new species. All of Professor Carpenter's specimens came from the same locality, the Bwamba Valley, Ruwenzori, *ca.* 6500–7000 ft., 13–15.i.26, and presumably were taken together.

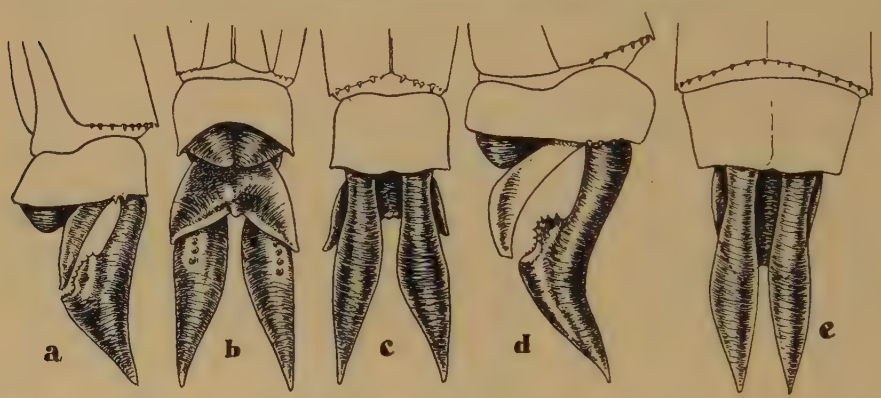


Fig. 1.—*a*, *b* and *c*. *Atoconeura extraordinata* sp. n., male anal appendages seen from the left side, ventrum and dorsum. *d* and *e*. The same of *Atoconeura biordinata* Karsch, left lateral and dorsal views (inferior anal appendage shown in dotted line).

Atoconeura extraordinata sp. n.

Male.—Abdomen 31 mm. Hind wing 34 mm. Pterostigma 3·5 mm. Head : Labium bright ochreous, the middle lobe and the adjacent parts of the lateral lobes black ; labrum black ; anteclypeus bright ochreous, postclypeus glossy black at centre, bright ochreous laterally. Frons dark reddish brown with blue metallic reflex above and a glossy black spot on each side bordered with ochreous. Vertex reddish brown with slight metallic blue reflex. Occiput brown centred with yellow. Behind head glossy black, but with two small isolated chrome-coloured spots at the border of eyes on each side. Prothorax reddish brown, anterior lobe bright ochreous, posterior lobe erect, fringed with dense long pale brown hairs. Thorax dark reddish brown, with cupreous metallic reflex, which becomes bluish green metallic on the upper part of dorsum and is marked with citron yellow as follows : A narrow sinuous humeral stripe separated from a conspicuous rounded spot surmounting the middle coxa ; an upper spot and an ill-defined narrow stripe on the antero-lateral suture ; a third narrow stripe on the postero lateral suture, which curves forward below the spiracle and then turns again downward so as partially to encircle another rounded spot above the posterior coxa ; finally the greater part of the posterior

part of the metepimeron and a spot below the insertion of the hind wing. Legs blackish, anterior femora with a citron yellow stripe on the inner surface not quite extending the full length of the limb. Hind femora with very small, very closely-set spines; claw hooks barely half the length of claws. Wings hyaline, without any basal markings; membrane grey, bordered outwardly with black; pterostigma ochreous with very thick black bordering veins, covering about $2\frac{1}{2}$ cells. Nodal index $\frac{9\text{–}11 \mid 12\text{–}9}{11\text{–}9 \mid 10\text{–}10}$; discoidal cells, fore wings traversed once; 2 rows of cells in discoidal field of fore wings to as far as the bridge; anal loop long and narrow, with split cells at discoidal cells and outer angle. Abdomen narrow at base from side to side, but rather deep dorso-ventrally, segment 3 tapering abruptly, segments 4–6 very narrow and cylindrical, 7 broadening to 8, segments 9 and 10 gradually narrowing to apex of abdomen; coloured black marked with bright citron yellow. Dorsum of segments 1–3 finely, an oval spot on segment 7 covering at least half its dorsum, but well separated from its base. An interrupted stripe on the sides of segments 1–3 and a baso-lateral spot on segments 4 and 5. Anal appendages black; superiors not quite as long as segments 9 and 10, narrow and cylindrical at base, then greatly expanded dorso-ventrally to form a very robust ventral spine; apices acuminate, slightly turned upwards; beneath and anterior to the ventral spine a scale-like prominence the border of which is furnished with some 10–12 small spines. Inferior appendage only about half the length of superiors, broadly triangular with apex very broadly splayed out by a broad shallow notch, so that the general shape of the appendage resembles that peculiar to genus *Gomphus* Leach and is quite foreign to the conventional Libelluline shape (figs. *a*, *b* and *c*). Genitalia with vesicle conspicuously bright yellow and projecting more than is usual in the genus; otherwise very similar to that of *A. biordinata*.

This new species is at once distinguished from *A. biordinata* by the shape of the inferior anal appendage.

Book Notice.

The Life of William T. Davis. By Mabel Abbott. 8vo. Ithaca, N.Y. (Cornell University Press), 1949. Pp. xv + 321. 18 half-tone pls. Price $3.50.

William T. Davis was a naturalist from a very early age until his death in 1945 at the age of 82. Almost his whole life was spent on Staten Island, opposite New York City, and in the Introduction to this book he is compared with Gilbert White as an inquirer into the world on his doorstep.

His special study was the seventeen-year cicada, one brood of which he followed through four emergences during his long lifetime, but his interests ranged through the whole field of natural history, and into local history as well. The list of his papers, included in this work, comprises three hundred and fifty titles. He worked as a clerk at the Produce Exchange in New York, but having some private means he was able to retire at the early age of forty-six, to give up all his time to nature study. He held many offices in learned societies, which he relinquished only under the stress of advancing age.

A SPECIES OF CHIRONOMID FROM THE SUDAN SUSPECTED OF CAUSING ASTHMA.

By Paul Freeman.

(*British Museum, Natural History.*)

Mr. D. J. Lewis, of the Sudan Medical Services, Khartoum, has recently sent me a large number of small Chironomids from Khartoum and Wadi Halfa which are suspected of causing a form of asthma amongst the natives. In certain months of the year these midges are present in enormous numbers and are an intolerable nuisance—it is presumed that they breed in the Nile.

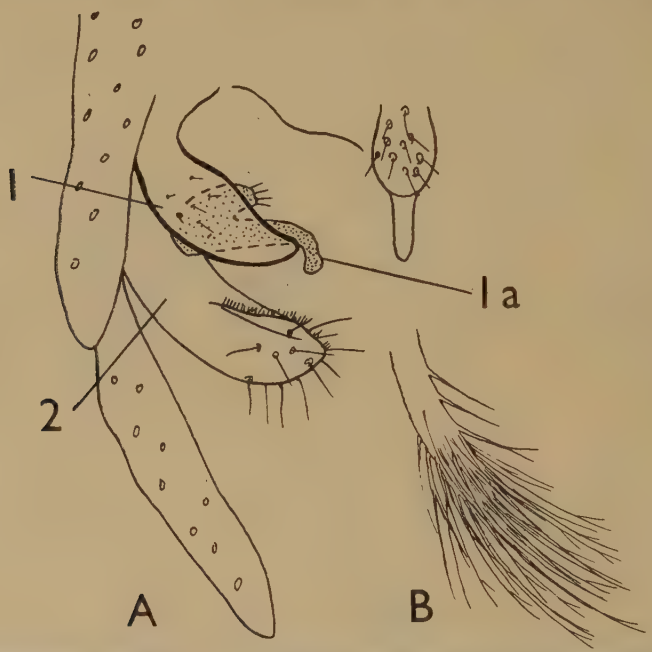


Fig. 1.—*Tanytarsus lewisi* sp. n. (A) Male hypopygium from above, appendage 2*a* omitted, the numbers refer to the appendages; (B) appendage 2*a* to the same scale.

Examination of the two samples sent showed that over 90 per cent. of the specimens belonged to a single species of *Tanytarsus* (*sensu stricto*, group *Cladotanytarsus*), the other 10 per cent. belonging to a number of different species. It is therefore probable that this single species is the one causing the trouble and for this reason I have considered it to be worth describing and naming.

Tanytarsus (Cladotanytarsus) lewisi sp. n.

A small greenish species with reddish scutal stripes and darker abdominal bands in the male; frontal tubercles present though small; antennal ratio about 1; leg ratio 2–2·3; appendages of the male hypopygium characteristic.

♂♀. Wing length 1·5–1·75 mm.

♂. Head yellowish green; frontal tubercles small but distinct; ratio of last two antennal segments to the basal ones 1·0 or thereabouts, antennae yellowish.

Thorax pale yellowish green, mesonotum with four indistinct reddish stripes more or less fused, scutellum yellowish; postnotum broadly margined with reddish or entirely reddish; mesosternum reddish.

Abdomen green, each segment dark apically giving a banded appearance. Hypopygium as in fig. 1; styles rather narrow, appendage 1 rather similar to other species in the group, but differs slightly and is constant in shape; appendage 2 normal, appendage 2*a* with branched hairs more numerous than in other species giving a more bushy effect; anal point normal.

Legs pale green, tibiae sometimes slightly darkened at their apices, pulvilli absent, combs of hind tibiae separate and each with a short spur; ratio of metatarsus of front leg to tibia 2–2·3.

Wings normal, with a few macrotrichia on the membrane at the apex, mainly in cell R_5, but there are a few in the upper corner of cell M_1. Halteres pale.

♀. Coloration as in male except that abdomen all dark green without the banded effect. Antennae with 5 segments, frontal tubercles apparently absent.

Holotype, male, Anglo-Egyptian Sudan: Khartoum, at hotel lights, 28.xii.48 (*D. J. Lewis*). Paratypes, 10 ♂, 10 ♀, same data as holotype; 10 ♂, 10 ♀, Wadi Halfa, iv.49 (*D. J. Lewis*).

This species is closely allied to the Palaearctic species *T.* (*C.*) *mancus* Walker, from which it differs in the paler colour, especially of the antennae and thorax, the smaller size, and in the structure of the male hypopygium, appendage 1 being of a slightly different shape, appendage 1*a* much shorter, and appendage 2*a* more bushy.

Book Notice.

Statistical Analysis in Biology. By K. Mather, D.Sc., Ph.D. With a foreword by R. A. Fisher. 8vo. London (Methuen & Co). Third edition, 1949. Pp. 247. Price 16*s*.

Originally published in 1943 and revised and augmented for the second edition of 1946, this book is intended to introduce the biologist to statistics as a working tool. It covers probability and significance, distribution, analysis of variance, regressions, correlation, and similar topics of immediate practical value to the biologist who wishes to deal statistically with his material.

It attempts to avoid the more theoretical and purely mathematical fields of statistics, and it is claimed that the developments can be followed with the mathematical equipment normally provided at school. The reader needs, however, the ability to digest a sustained mathematical argument, which does not always follow upon merely understanding the meaning of the symbols used.

There is a glossary of terms, and a series of tables in the appendix is abridged from Fisher and Yates' book.

A NEW BRITISH APHID SPECIES FROM *LINARIA*.

By H. L. G. Stroyan, M.A., F.R.E.S.

Brachycaudus linariae sp. n.

Colour Notes.

Deep blackish green, shiny, with sclerotic pattern of dorsum obscurely darker ; siphunculi and cauda blackish ; antennae with joints III and IV pale, remainder dusky ; legs pale, with tarsi, tibial apices and a large part of the femora dusky. Immature forms of a paler green colour.

Microscopic Morphology.

Apterous viviparous female.—Body plump oval, 1·4 to 1·9 mm. long. *Head* sclerotic, smooth ; frons hardly at all sinuate, almost straight ; all cephalic hairs minute, not more than one-third articular diameter of 3rd antennal joint. *Antennae* 6-jointed, joints III and IV sometimes showing fusion ; from about half to nearly two-thirds body length, when the two basal joints are included ; processus terminalis from 3·2 to 3 6 times the length of the basal part of VI ; joint I almost smooth, II slightly imbricate, III to VI evenly and fairly closely imbricate throughout ; antennal hairs as cephalic and frontal hairs, and few in number, hardly visible except under $\frac{1}{6}$th in. objective ; secondary rhinaria absent. *Rostrum* reaching 3rd pair of coxae ; apical joint normal, fairly stoutly built, a little less than one and a half times 2nd joint of hind tarsi, and with 3 or 4 pairs of hairs besides the 3 apical pairs. *Pro-* and *mesonotum* each with a complete transverse sclerotic band ; pronotum with a pair of large but flat and inconspicuous marginal tubercles. *Metanotum* with a less complete and more or less interrupted transverse spinal band. *Abdomen* with sclerotic ornamentation extremely variable ; the majority of specimens have the discal area of the dorsum occupied by a more or less broken-up sclerotic patch consisting of the more or less fused transverse spinal bands of segments 1 to 6 inclusive ; in the more heavily marked examples this area extends laterally to absorb the pleural "Muskelplatten," and the limits of the individual segmental bands are obscured ; while in one exceptionally lightly marked member of the type series the pattern is reduced almost to vanishing point, only one or two very small and pale sclerites representing the transverse bands on 1 to 5, and a broken-up band of sclerites remaining on 6. Separate complete transverse bands across segments 7 and 8 occur in all the members of the type series. Flat and inconspicuous marginal tubercles occur from 1 to 5 inclusive, and are usually surrounded on 2 to 5 by small pale marginal sclerites. The dorsal sclerotic area shows a well-marked reticulate spinulose sculpturing. Dorsal abdominal body hairs very short and inconspicuous, barely if at all longer than antennal and frontal hairs. *Siphunculi* long, sub-cylindrical, sclerotic, sparsely imbricate along whole length, slightly longer than joint III of antennae ; apex with well marked flange and subapical circumcision. *Cauda* short, bluntly rounded, constricted basally, with about 10 to 13 hairs (lower numbers have been counted in two or three specimens, but these are suspect owing to the difficulty of determining which hairs arise from the cauda and which from the subanal plate in these specimens). *Legs* normal ; tibial hairs rather recumbent, short and spiny, not more than half the minimum diameter of the tibiae. Chaetotaxy of first tarsal joints typically 3 : 3 : 2, abnormally 3 : 3 : 1.

Measurements of Type Series of Apterae (Great Wilbraham, Cambs, 10.viii.49):

Body.	Ant.	Joint ratios (III to VI inc.).	Siph.	Cauda.	Caudal hairs.	Ap. jt. rost.	2nd jt. hd. tarsi.
1·68	0·75	12 : 7 : 6 : 5 + 17	0·24	0·10	?8	0·14	0·10
1·65	0·91	15½ : 8 : 7½ : 5½ + 20	0·26	0·10	11	0·14	0·10
1·70	0·85	15 : 8 : 7 : 5 + 18	0·26	0·10	?8	0·14	0·10
1·55	0·82	13½ : 8 : 7 : 5 + 18	0·26	?	10	0·14	0·10
1·66	0·74	12 : 7 : 6½ : 5 + 16	0·24	0·09	12	0·14	0·10
1·87	0·80	14 : 8 : 6½ : 5½ + 16	0·25	0·09	?9	0·14	0·10
1·68	0·77	12½ : 7 : 6½ : 5 + 17	0·24	0·10	13	0·14	0·10
1·70	0·82	13½ : 8 : 7 : 5½ + 17	0·26	0·10	13	0·14	0·10
1·50	0·79	13 : 7 : 7 : 5½ + 17	0·24	0·09	13	0·14	0·10
1·58	0·87	14½ : 9 : 7 : 5½ + 18	0·24	0·10	12	0·14	0·10
1·57	0·83	14 : 8 : 7 : 5½ + 17½	0·26	0·10	13	0·14	0·10
1·58	0·87	15 : 9 : 7 : 5½ + 18	0·26	0·10	?11	0·14	0·10
1·58	0·79	14 : 8 : 6½ : 5 + 16	0·25	0·10	13	0·14	0·10
1·44	0·86	14 : 9 : 7 : 5 + 19	0·24	0·08	13	0·14	0·10

All lengths measured in mm. Body measured from apex of cauda or posterior margin of subanal plate (if cauda is reflexed) to midpoint of frons; antennae measured *without* joints I and II.

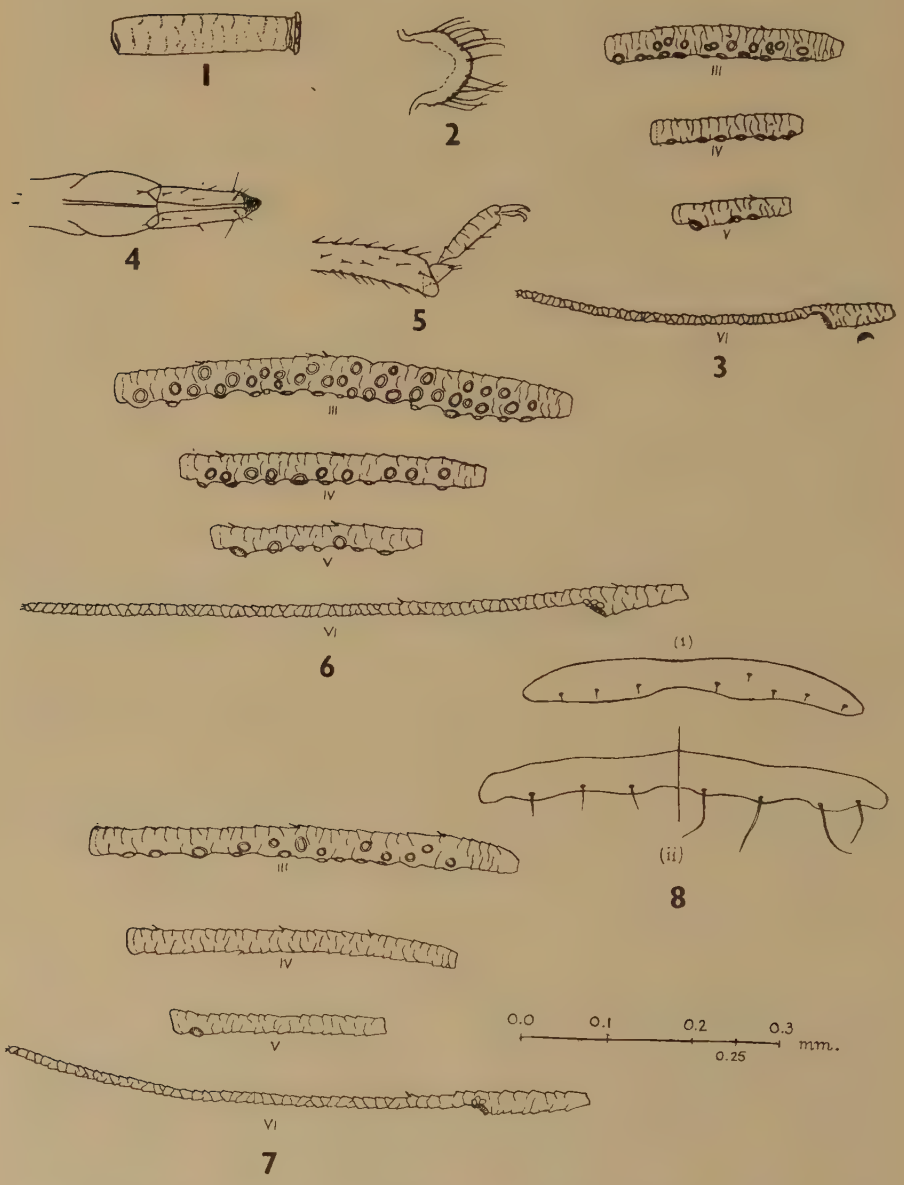
Alate viviparous female (from one specimen).—Morphology largely similar to that of apterae. *Antennae* uniformly sclerotic, rather closely imbricate, with secondary rhinaria along whole length of III in two or three irregular rows, a single row along whole length of IV and one or two on V besides the primary. *Pronotum* with moderate sized and well marked marginal tubercles. *Abdomen* with marginal tubercles on 1 to 5 inclusive; dorsum membranous on 1 to 3 inclusive, 4 with a pair of smallish spinal sclerites, 5 and 6 with broad transverse bars, 7 and 8 with narrower bars; pleural "Muskelplatten" of intersegments 4/5 and 5/6 rather large and conspicuous. Marginal sclerites well developed on 2 to 4 inclusive, smaller on 1 and 5. *Siphunculi* and *cauda* as in apterae, the latter with 13 hairs.

Measurements of specimen (Gt. Wilbraham, 10.viii.49).—Body 1·57 mm., antenna without joints I and II 1·02 mm., joint ratios (III to VI) 17 : 11 : 8½ : 5½ + 22, siphunculi 0·21 mm., cauda 0·08 mm., caudal hairs 13, apical joint of rostrum 0·14 mm., 2nd joint of hind tarsi 0·10 mm., secondary rhinaria on left antenna 33/7/1, on right 29/9/2.

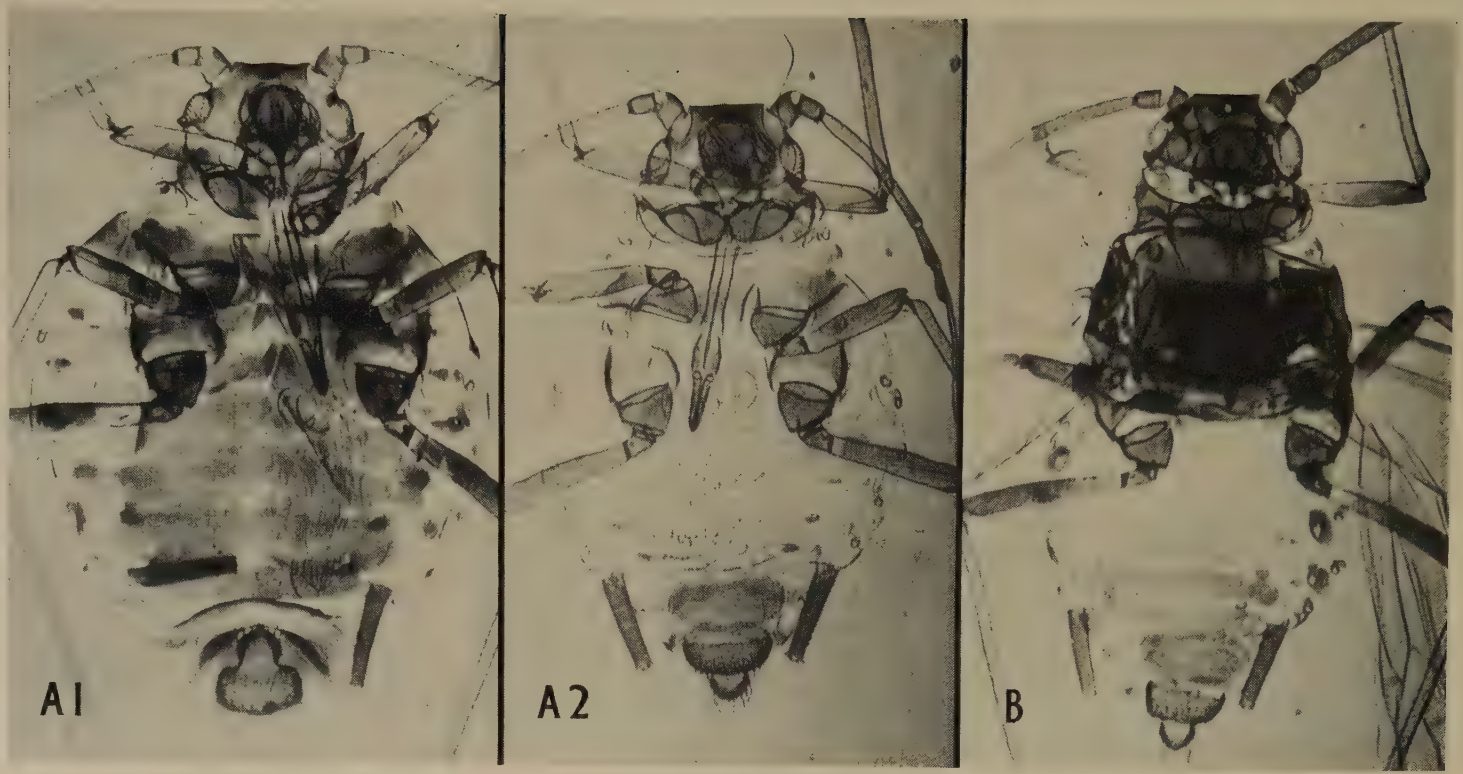
Type material in the author's collection.

Biology.

The type series of 14 apterous and 1 alate viviparous females was taken from the basal parts of a single plant of *Linaria vulgaris* growing among other herbage on the edge of a footpath at Great Wilbraham, Cambridgeshire. The aphids were attended by the ant *Acanthomyops niger* (L.). A careful search of all the plants of *Linaria* growing in the vicinity, and also of plants growing in a number of other Cambridgeshire localities, failed to yield any more material of the species. It is not known, therefore, whether the aphids are confined to this host plant for the whole of their life cycle. No other species of *Brachycaudus* Van der Goot appears to be recorded from *Linaria vulgaris*, although a species of *Sappaphis* Matsumura, which Dr. Hille Ris Lambers suspects to be the alienicola form of *S. reaumuri* (Mordwilko) has been found on another species of *Linaria* on the continent, while the common *Brachycaudus helichrysi* (Kaltenbach) is known to occur on *Bartsia* and *Veronica*.



FIGS. 1–8.—(1) Siphunculus; (2) cauda; (3) joints III to VI of antenna of al. viv. ♀; (4) apex of rostrum; (5) apex of hind tibia and hind tarsus of apt. viv. ♀ *B. linariae* sp. n.; (6) antennal joints III to VI of al. viv. ♀ *B. prunicola* (Kalt.); (7) ditto of al. viv. ♀ *B. cardui* (L.); (8) 8th tergital sclerites (diagrammatic) of (i) *B. linariae* and (ii) *B. cardui*, showing variation of the hair lengths in the latter species.



Brachycaudus linariae sp. n.—(A1) and (A2) Apterous viviparous females; (B) Alate viviparous female.

H. L. G. Stroyan.

Adlard & Son, Ltd., Dorking.

Lichtenstein (1884) mentions an *Aphis linariae* from *Linaria cymbalaria*, but apparently gave no description, so that his name is invalid ; it is possible that he had the present species before him.

Taxonomy.

This aphid is a typical member of the genus *Brachycaudus* Van der Goot, being without spinal tubercles and having widely open subcircular stigmata, typically circumcised apices to the siphunculi and not more than 3 hairs on any of the first tarsal joints. The length of the siphunculi (2·4 to 3 times as long as the cauda and about as long as the third antennal joint) at once separates *linariae* from any other British *Brachycaudus* except *cardui* (L.) and *prunicola* (Kaltenbach). From these two species the general facies will almost certainly distinguish it immediately, and any possibility of confusion is instantly removed by reference to the number of caudal hairs, which is abnormally large in *linariae* (10 to 13 in typical examples, as against 6 to 8 in the other species). Other diagnostic features of typical *linariae* are the greater or less degree of breaking up of the abdominal ornamentation, the stouter build of the antennae and the extreme shortness of all the hairs ; those on the 8th tergite are particularly characteristic, since both *cardui* and *prunicola* have much longer and more acute hairs on this tergite than on the preceding ones, while in *linariae* they are not much longer or more acute. The only alata yet known lacks the strongly marked pleural sclerites on the venter of the abdomen seen in *cardui* and *prunicola*, and the arrangement of the rhinaria is different from either species (see figures).

Acknowledgments.

The writer is indebted to Dr. Hille Ris Lambers for giving a further opinion on the novelty of the species here described, and for material of *Brachycaudus prunicola* (Kaltenbach) used for comparative purposes ; and to the Agricultural Research Council for the research grant enabling him to prepare the present account.

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Lichtenstein, J., 1884, *La Flore des Aphidiens*. Montpellier.

Patch, E. M., 1938, Food-plant Catalogue of the Aphids of the World. *Bull. Me. agric. Exp. Sta.* **393**.

Book Notices.

Papillons d'Europe. 1. *Diurnes et Écailles.* By Jacques-F. Aubert. [Les Beautés de la Nature.] 8vo. Neuchâtel et Paris (Delachaux et Niestlé, S. A.), 1949. Pp. 207, 48 col. pls., 15 half-tone, 39 figs. Price 17 Swiss Frs.

The first of two volumes written as a text to accompany a new edition of the paintings of Lepidoptera, imagines and early stages, of Léo-Paul and Paul-A. Robert. This volume is in two parts, biological and systematic.

Part I discusses morphology of the adult, including much that applies to insects generally; variation, geographical and seasonal; nutrition; sexual differences and mating; classification; egg; larva; economic importance; processionary caterpillars; larval systematics; pupa; metamorphosis; emergence.

Part II deals with identification of the species shown on the plates, said to be the "most remarkable and most typical." Selected examples are dealt with family by family. In this volume are covered Rhopalocera, and moths of the families Amatidae, Arctiidae and Noctuidae. The other Heterocera are to make up Volume II.

The Honeybee: An Introduction to Her Sense-physiology and Behaviour. By C. G. Butler. 8vo. Oxford University Press, 1949. Pp. vi + 139, 6 half-tone plates. Price 10s. 6d.

A straightforward account of how a honeybee goes about its daily task of locating and collecting food, this book is intended to bridge the gap between a detailed manual on bee-keeping and an academic treatise on physiology and reactions to stimuli.

After an outline of social life and division of labour the senses of the honeybee are reviewed in two chapters, the second of which is devoted to smell and taste. The collection and utilization of propolis, water, pollen and nectar receive a chapter each, with an account of chemical composition, function in the economy of the hive, and transportation to the hive.

The last chapter on the behaviour of the honeybee in the field co-ordinates the separate activities, and gives an account of recent work by von Frisch on methods of communication, and by Rothamsted workers on foraging behaviour.

Each chapter has a list of authorities quoted in the text, and an index of authors and a general index complete the book.

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